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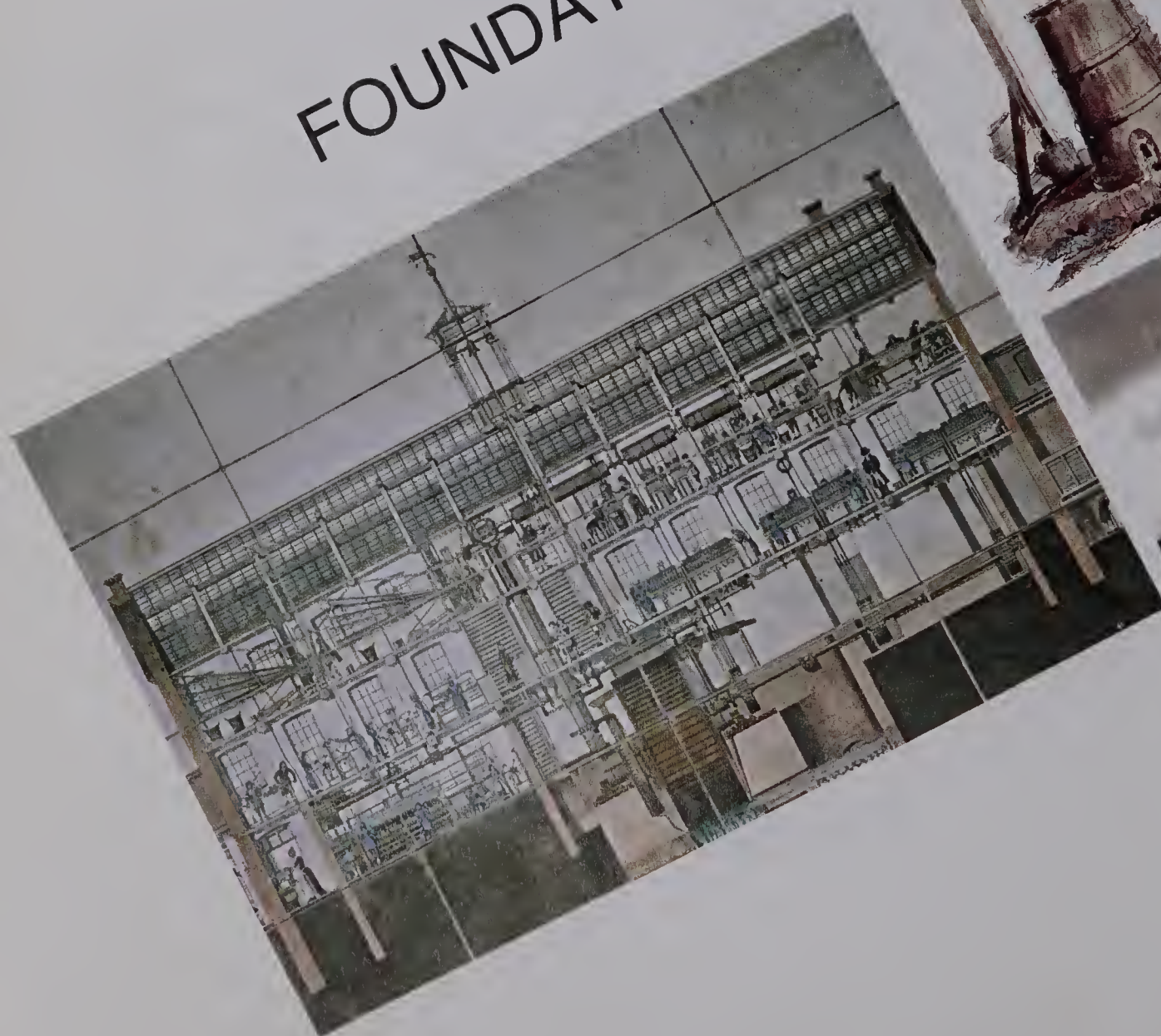
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THE IMPACT OF THE INDUSTRIAL REVOLUTION

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New York Chicago San Francisco Atlanta Dallas and London

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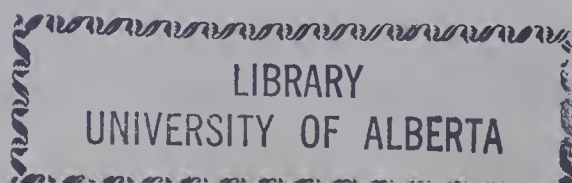
The publisher also wishes to acknowledge the assistance of W. W. Rostow, Professor of History and Economics, University of Texas at Austin, in the preparation of the map on pages 6-7.

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Printed in the United States of America

ISBN 0-15-379213-2



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THE IMPACT OF THE INDUSTRIAL REVOLUTION

Look at these pictures. What evidence can you find that the people in each picture have what they need to be happy?





📖 What do most people need to be happy? Make a list of the things which might make most of the people you know or see around you happy. Your list might include such items as a house, a car, or an interesting vacation. It might also include things which cannot be bought, such as friendships or a good family life.

Now make a list of your own requirements for happiness.

- Put the items that are essential to you near the top of the list.
- Add other items to the list, in the order of their importance to you.

Keeping track of your own thinking is an important part of this Unit. Groups of questions and activities like these will appear from time to time to help you sort out your ideas. They will be signaled by this mark 📖. Recording your ideas in a notebook will give you a chance to compare your thoughts as you go along.



Many of the things that people find important to their happiness today are things that were completely unknown to people 100 or 200 years ago. These things have been made possible by the invention of machines and by the organization of people into industries in which machines could be used efficiently. This process of industrialization, which began about 200 years ago, has brought about tremendous changes in people's lives and expectations.



Machines and technology are so common in our lives that we may not stop to consider the tremendous changes that have taken place since the beginning of industrialization. But think for a moment and imagine what life might have been like if you had lived around 1770. Remember that there would be no electricity, no mass production of food, clothing, or any other product. The only communication would be by word of mouth or by letters, books, and journals. And many people at this time could not read or write. The only means of transportation for most people was by foot or by horse and wagon.

Obviously, since 1770 there have been many changes in how people live. Most people living in modern industrial societies believe that these changes have been for the better. They enjoy the comfort and convenience of modern living. Many people living in parts of the world that are not yet highly industrialized look forward to the day when they can enjoy the same benefits.

At the same time, however, industrialization has created a great many problems. Some people even wonder whether the costs of industrialization might be greater than the benefits. They wonder whether people really are happier today than in the past.



Expressing Your Views

1. *The pictures on page 4 show various aspects of modern industrialized society.*
 - *What benefits of industrialization can you see in these pictures?*
 - *What problems created by industrialization can you see?*
2. *Try to imagine how our modern industrial life style might have come about.*
 - *What might have caused the earlier way of life to disappear?*
 - *What might have caused the particular features of industrial society, as we know it, to appear?*



As you think about these questions, try to state some hypotheses of your own. A hypothesis is a possible explanation, which can be tested against evidence and changed if necessary.

- *Write down your hypotheses as to what events must have taken place to bring about industrialization.*
- *Divide your hypotheses, or possible explanations, into three parts:*

What happened? What caused it to happen? Was it worth it?

The Spread of Industrialization



 Industrialized countries totaling more than 80% of current world production (present-day boundaries).

DATES Approximate date in which industrialization began.



About This Unit

Machines and industry have totally changed the way people live. These changes did not happen all at once, but the overall effect has been so dramatic that the whole process is usually referred to as the Industrial Revolution. In this Unit, we will be searching for answers to three basic questions about the Industrial Revolution:

What happened?

What caused it to happen?

Was it worth it?

In looking for answers to these questions, we must look back to the time and place in which the Industrial Revolution began. The country was England, and the time period was roughly 1770–1850. From England, the Industrial Revolution spread to Europe and America, and later to Asia. Parts of Asia, Africa, and Latin America are just beginning to industrialize today. In this way, a “revolution” that began 200 years ago in England has come to affect every country in the world.



England (with Wales) and Scotland united in 1707 to form the kingdom of Great Britain. But the terms *England* and *English* are often used to mean Great Britain and *British*.

The Evidence

Rather than trying to survey a number of different countries at different times in history, we will concentrate on the changes that took place in England between 1770 and 1850.

For the most part, we will focus on the lives of individual people—those who helped to bring about change, those who resisted change, those who were helped or hurt by the changes as they happened. Some of this evidence comes from the lives of real people who lived during this period. Other evidence comes from statistics about land, jobs, and money, statistics which we have used to recreate the lives of “typical” people. In this way, we can piece together the lives of people who were not considered important enough to write about, and who had neither the education nor the desire to write about themselves.

The Student as Judge

When you look back on any period in history, you must remember that the people living at that time did not have the advantage that you have of knowing what came after their lives. To understand people's actions and behavior, you must try to focus on their world as they saw it. Trying to view events and changes through the eyes and minds of others, especially people living at a different time in a very different world, is not easy. It is important to rely on the evidence from the period and to try not to impose modern attitudes on people who lived in other times.

After you have looked at the evidence about industrialization in this Unit, you will be asked to apply your own judgment to the many decisions that people made along the way. By following the path they took, you can determine what you think they gained from industrialization. You can also determine what you think they lost. As you attempt to evaluate the decisions made, think about the choices that were open to people living at the time when industrialization began. Could they have taken a different course of action? If so, do you think they would have been better off?

“What would have happened if . . .” is not a very scientific approach to history. We can never really know the answer, let alone change the past. But by asking questions about the past we can better understand how decisions are made. It may also help us make decisions about the future.

One of the goals of this Unit is to find out how and why changes came about. We now turn back the clock to the late 1700's. To do so let's look at England before the Industrial Revolution, in order to observe how the first important changes came about. What we hope to discover in this first part of the Unit is:

What was life in England like before industrialization?

What caused it to change?

How did those changes take place?

What were the effects on the men, women, and children involved?

1. Life in England

Before the Industrial Revolution

TWO FAMILIES: THE MOORES AND THE WHITEFIELDS

In order to see how a large number of people lived and worked in pre-industrial England, we will focus on two families living in the county of Buckinghamshire, 50 miles (80 kilometers) northwest of London, in the year 1790. These particular families are imaginary – we will call them the Moores and the Whitefields – but they represent a way of life that was real.

Out of almost two million families in England at this time, roughly 750,000 families in the countryside lived as these two families did. Perhaps another 375,000 families living in towns and cities had the same standard of living. That is, they all had similar kinds of possessions, and they had to make the same kinds of decisions about what they could afford.

As you observe the lives of these two families, try to imagine the day by day pace and style of the way they lived. Try to figure out what they thought about, what they worried about, and what they might have hoped for.

Tom and Anne Moore live in the village of Farmington. They are both thirty-five years old. Anne has been married before, but her first husband died two years after the marriage. The Moores have three children, aged six, four, and one. They had another child, but it died soon after birth.

The Moores rent a cottage made of stone and clay, with a thatched roof. The cottage has only one room, with a big fireplace for heat and cooking. There are two beds, one for the parents and one for the two older children, and a cradle for the baby. There is a small area behind the beds, where the animals – a cow and ten chickens – are kept at night. The floor is made of boards laid over the bare ground, which makes the house damp, especially in winter. (The child that died was born in the winter.) They have a wooden table and chairs, knives and forks, glasses, and simple earthenware dishes. They have no running water (it must be carried from the village pump) and, of course, no toilet. The cottage is on one acre of land, which the Moores use to grow their own vegetables.

May

Tom Moore works as a farm laborer for George Thompson, who owns 200 acres of land. (The average size of farms in Buckinghamshire at this time is 179 acres.) This farm is made up of several different strips of land scattered around the village. Tom helps with the plowing, sowing the seeds, and harvesting the grain (wheat and oats). In summer, especially during the harvest, he works from dawn (4–5 A.M.) to dusk (8–9 P.M.). George Thompson generally works along with Tom and three other farm workers. In addition to receiving wages, the workers eat their midday meal at the farmhouse along with the Thompson family. In winter, when there is no regular farm work, Tom does odd jobs for George Thompson and other farmers.

Anne Moore is up at dawn every day to milk the cow. During the day, the cow is taken to pasture by a boy who takes care of all the cows in the village. The Moores' cow grazes with the other cows and sheep on common meadows, which are areas of land belonging to the village as a whole. Sometimes they also graze on the fields of farmers such as George Thompson, as long as it is not the growing season.

Anne makes most of the cow's milk into butter and cheese. Using a hand churn, it takes her about two and a half hours to make butter. Making cheese takes eight to ten hours. Some of the butter and cheese is eaten by the family, but once or twice a week Anne takes the rest to the market in the town of Marshton, 10 miles (16 kilometers) away. She usually rides on a neighbor's horse-drawn wagon, and they must leave by 4 A.M. in order to reach the market when it opens at 6 A.M.

Anne also grows vegetables in the garden, tends the chickens, cooks, takes care of the house, and makes the family's clothes. Her six-year-old daughter helps in the house and garden and takes care of the younger children.

After the harvest, Anne has the right to *glean*, or pick up any stray pieces of grain left behind in the fields of everyone in the village. She usually gathers about five bushels of wheat, or enough to make bread for the family for ten weeks. She also has the right to gather fallen wood in the village forest to use as fuel for cooking and for heating the house in winter.

changes
rising expectation

What is the relationship between Tom Moore and George Thompson?
—In what ways does Tom need George?

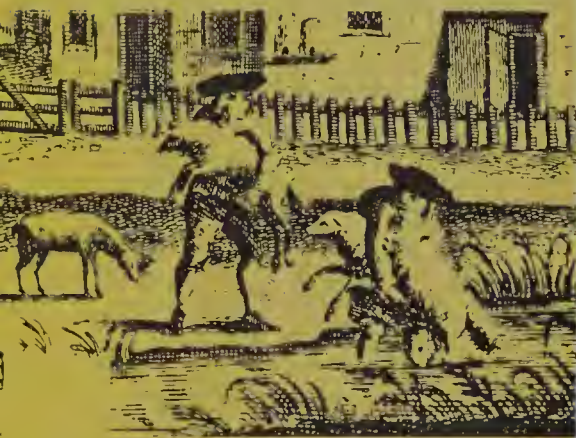
—In what ways does George need Tom?

What do Anne, Tom, and the oldest child each contribute to the family?

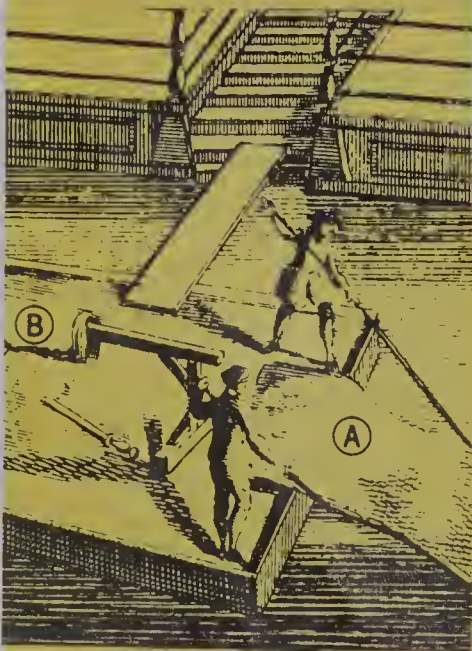
What is the importance of the cow to the family?

John and Mary Whitefield live next door to the Moores. John is forty-one, Mary is thirty-seven, and their three children are twelve, eight, and six. The twelve-year-old, a boy, no longer lives at home. He has gone to work as a farm servant in another village 15 miles (24 kilometers) away, and he lives with the family for whom he works. The Whitefields have little contact with him, as it is too far to walk home on his day off, and he does not know how to read or write letters.

PRODUCING WOOL CLOTH



1. Shearing the sheep.



2. Wool being washed (A) and hung to dry (B).

The Whitefields rent the same type of cottage as the Moores, except theirs has a brick floor, not just boards, and it has a loft where they sleep. They, too, have a one-acre garden for growing vegetables. They keep a few chickens, but no cow. Their household goods are similar to those of the Moores, except that they also have a spinning wheel and a loom for weaving woolen cloth.

John Whitefield rents ten acres of land, in four separate strips, from the village. This farmland, like the common meadows and woods, belongs to the village as a whole. On this land, John grows wheat and barley. To do the heavy plowing, he rents a

3. Beating wool to make it soft and to remove dirt.



4. Carding (or combing) wool to separate and straighten wool fibers.

horse from George Thompson. He also buys manure from George to use as fertilizer. After the harvest, he takes the grain to the miller to be ground into flour for bread. John's harvest plus Mary's gleanings (she also has the right to glean) provide enough grain for the family, after paying what they owe (in grain) to George Thompson and the miller.

Mary Whitefield bakes the family's bread at the village bakehouse. At home, she grows vegetables, tends the chickens, cooks, takes care of the house, and sews. The two children who are still at home help in the house and garden. Mary also has the right to gather firewood.

In the winter, and whenever farm work is light in the summer, the Whitefields spin and weave wool. They work at weaving at least twelve hours a day in the winter, less in summer, and hardly at all at harvest time.

In what ways does the Whitefield family depend on the land?

What are the advantages of this way of supporting the family? the disadvantages?

5. Spinning wool into yarn.



6. Weaving yarn into cloth.
Sideview of hand loom.

7. Weaver handing over cloth to merchant.



See Research Bank Nos. 1-2, pages 98-104, for descriptions of English village life and the cottage industries of the countryside.

HOW THE MOORES AND WHITEFIELDS SPEND THEIR EARNINGS

Tom Moore earns 10 shillings a week in summer and 6 shillings in winter. His earnings average 8 shillings a week throughout the year. Anne earns an average of 4 shillings a week from selling butter and cheese. In addition, she saves on food costs by gleaning wheat and on fuel costs by gathering wood. She also grows the family's vegetables and makes their clothes (except for shoes and hats). The cow provides them with milk to drink or to use for making butter and cheese. The chickens provide them with eggs.

Here is a list of the basic weekly expenses of the Moore family. It includes only the items they buy from others, not what they produce for themselves.

THE MOORES' AVERAGE WEEKLY BUDGET

*shillings/pence**

6s/	—	Wheat for bread (would be 7s/6d without gleanings)
1s/	—	Rent for cottage
—/	4d	Coal for heating (would be —/9d without firewood)
—/	2d	Tea
—/	4d	Sugar and salt
—/	3d	Soap
—/	5d	Thread and candles
1s/	2d	Meat (one pound at —/7d, twice a week)
8s/	20d	= 9s/8d

The Moores' average weekly income is 12 shillings. After basic expenses, they have 2 shillings and 4 pence left over. This extra money is used to buy wool for clothes, to buy shoes and hats, and to cover sickness and other emergencies.

* **English Money System:** According to the English money system of this time, one pound (£) = 20 shillings (s) and one shilling = 12 pence (d). This cannot be translated directly into present-day English or American money. The important thing is to show how much money people earned and what they could buy with it.

John Whitefield is paid by the piece for weaving. The family's earnings are greater in winter than in summer, but they average 10 shillings a week throughout the year. In addition, John's farming and Mary's gleanings provide enough grain for the family. Mary also saves money by gathering wood, growing vegetables, and making clothes. And their chickens provide eggs.

Here are the weekly expenses of the Whitefields. Is one of these families better off than the other? How can you tell?

THE WHITEFIELDS' AVERAGE WEEKLY BUDGET

shillings/pence

2s/ –	Rent for farmland
1s/ 6d	Rent for cottage
– / 4d	Coal
– / 2d	Tea
– / 4d	Sugar and salt
– / 8d	Soap, candles, and thread
– / 5d	Milk
– / 4d	Butter
– / 3d	Cheese
1s/ 9d	Meat (three times a week)
4s/45d = 7s/9d	

The Whitefields' average weekly income is 10 shillings. After basic expenses, they have 2 shillings and 3 pence left over. This extra money is used for items such as shoes and hats, for emergencies, or for occasional treats.

A Modern Parallel

1. What does your family buy that the Moores and Whitefields produced for themselves?
2. What goods and services does your family provide for itself?
3. Suppose that you and your family were suddenly cut off from the outside world, with no electricity or telephones, no modern transportation, no supermarkets or department stores.
 - How would you go about supporting yourselves? What would you have to do without?
 - Do you think you would be better off or worse off than the Moores and Whitefields? Why?
4. Think of some families you know today—your own, your friends', your neighbors'. How do the various family members—the men, the women, the children—contribute to supporting the family (including the work they do at home)?
5. In what ways are these contributions similar to those in the Moore and Whitefield families? In what ways are they different?

THE CHANGING COUNTRYSIDE

John Whitefield learned weaving as a boy from his father. He left home at the age of ten and worked as a servant for a number of farmers, until he had saved enough money to marry and to set himself up as a farmer and a weaver. Mary's father had also been a cottage weaver. Tom and Anne Moore, too, lived in much the same way as their parents and grandparents had lived. Naturally, all of them assumed that their own lives and the lives of their children would follow the same patterns in the future. But great changes lay ahead. As you read about these changes, keep in mind the three basic questions:

What happened?

What caused it to happen?

Was it worth it?

It is spring 1790. George Thompson has just returned from London. He is excited about a movement called *enclosure*. He is talking with his workers, including Tom Moore. John Whitefield is also there.

GEORGE: While I was in London, I heard a great deal of talk about enclosure. On my way to London and back, I saw a number of villages where the land was being enclosed. I think it is a great idea. This is how it works:

All the village land, or common land, is divided up among the different landowners in the village. This is done in proportion to the amount of land each person owns. That is, the more a person owns, the more he gets. At the same time, the boundaries are redrawn, so that each person's land is all in one piece – not scattered around the village in strips. Finally, each landowner must fence in, or *enclose*, his own property.

TOM: Wait a minute. What happens to our cow? Now she can graze on the common meadows. If the common land is broken up and given to individual landowners, then there will be no place for our cow to graze. And what about my wife's gleanings? And the firewood she gathers on common land? There is nothing in this enclosure thing for us.

JOHN: Tom's right. And what about us? I won't be able to rent land from the village if all the common land is taken away. Where will I get my bread?

GEORGE: Don't worry. You fellows will probably get some land of your own, since you have some rights in the common land. Anyway, there'll be plenty of work for both of you on my

farm. I will have a lot more land, and very little of it will go to waste when it is all in one big piece. Both of you can earn a good living by working on my farm.

TOM: What happens if you decide not to give us any work, or if you don't have any work for us at some point? What if something happens to you? We won't have anything to fall back on, the way we do now. We'll starve.

GEORGE: Believe me, I'll have plenty of work for you. The price of grain, especially wheat, is going up. Now that a canal runs from Marshton to London, we can easily send our grain to London to sell. Enclosure will let us make the best use of all the land in Farmington. By growing more wheat, and selling it at a good price, everybody will be better off.

Analyzing the Evidence

1. *What is each of these three men most concerned about?*
2. *If the common land is divided and fenced in, what might be the results:*
 - *for the Thompsons?*
 - *for the Moores?*
 - *for the Whitefields?*
 - *for the village of Farmington?*
3. *Would you suggest a different plan? If so, what would it be?*

◆ The many sides of life in London during the 1700's are presented in Research Bank Nos. 3–4, pages 104–06.

THE ENCLOSURE OF FARMINGTON

All the landowners in Farmington agreed that the common land should be divided among themselves. They petitioned Parliament—the English lawmaking body—to pass a law allowing the land of Farmington to be redivided and enclosed.

The Members of Parliament

Parliament was made up of two branches, the House of Lords and the House of Commons. All laws had to be passed by both Houses, and then signed by the King (or Queen).

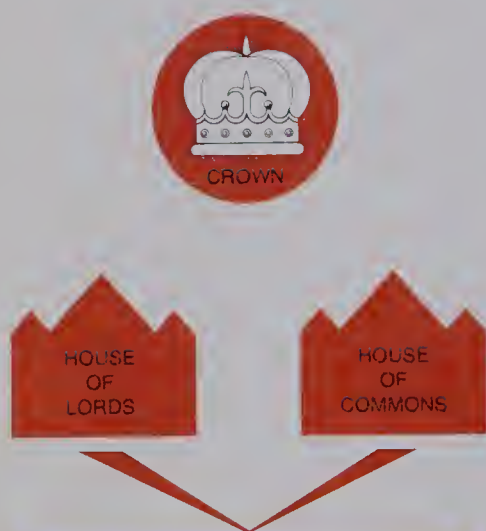
The House of Lords included all the greatest nobles, or Lords, of England. Their titles, such as Duke or Earl, were handed down from generation to generation, from the father to his oldest son. The King (or Queen) could also grant new titles, usually as a reward for some great service. As of 1761, there were 206 members of the House of Lords.

The House of Commons represented all the other people—the “commoners.” It had 558 members, who were elected by a very complicated system.

There were two different kinds of election districts: counties and boroughs. Members of Parliament representing counties were elected by all the people within the county, such as Buckinghamshire, who owned land worth at least 40 shillings per year in rent. This would include people who owned quite a bit less land than George Thompson. (Remember that John Whitefield paid 2 shillings per week, or 104 shillings per year, as rent for 10 acres.) But it would not include anyone who owned only a few acres or no land at all, such as the Moores and Whitefields.

The majority of members of Parliament (432 members) represented boroughs. A borough was a town or other special area, but the size of boroughs varied a great deal. In some boroughs, every adult male, except servants, could vote. In others, only a few people living in certain houses could vote. One borough (Old Sarum) was just a hill with no one living there; the man who owned the hill simply chose that member of Parliament. All in all, in counties and boroughs, only about one out of thirteen adult males could vote.

Many seats in the House of Commons (such as the one representing Old Sarum) were controlled by rich and powerful individuals. About 75 percent of all members held seats which



PARLIAMENT IN THE 1700's

The House of Lords and the House of Commons had equal power. Bills had to pass in both houses to become law. The King had to sign all laws. While the King was considered the ruler of Great Britain, he had little real power in the 1700's and generally accepted the policies decided by Parliament.

had previously been held by their own ancestors, often for many generations. More than half of all members were sons of Lords or lesser nobles. Almost all the rest belonged to the class of large landowners known as the gentry.

What Happened in Parliament

Parliament had established a general rule that, if the owners of at least three fourths of the land favored enclosure, it would be granted. Note that it was the amount of *land* involved (in terms of its money value), and not the number of landowners. Thus, a large number of small landowners could be outvoted by one or two people with large holdings. Here is how the process worked in an actual case of enclosure in the village of Stanwell.

□ STANWELL ENCLOSURE ACT, PARLIAMENTARY PROCEEDINGS, February 20, 1789:

Petition from Lord of the Manor, Sir William Gibbons, and others for enclosure. Bill [draft of law to be voted on] read twice.

REPORT AND COUNTING OF CONSENTS, March 30, 1789:

Sir William Lemon reported that the rules had been complied with. The parties concerned had given their consent, with these exceptions: The owners of land totaling £165 in annual value had refused to

sign the Bill. The owners of land worth a total of £220 per year did not choose to sign the Bill, but made no objection to the Enclosure. Some small owners of land worth about £76 per year could not be found. The total property belonging to persons interested in the Enclosure amounts to £2,929 per year.

Bill passed both Houses. Approved by the King, May 19, 1789.

(Adapted from *The Village Labourer*, 1760–1832 by Barbara Hammond, published by Longman Group Ltd. Reprinted by permission of the publisher.)

Did this enclosure follow Parliament's rule? How can you tell?

In what ways do you think this system of making decisions was a fair one? In what ways does it seem unfair?

What Happened in Farmington

Since all the landowners in Farmington favored enclosure, Parliament agreed to their petition. Parliament appointed a group of commissioners to decide exactly how the common land and the farmland of Farmington should be divided.

George Thompson, who owned 200 acres of land, was granted an additional 100 acres from the common land. Since Tom Moore and John Whitefield did not own any land, they did not have any say about enclosure or the division of land. However, they did have rights to the common land—to graze cattle, glean wheat, and gather fuel—which they would lose. Therefore, the commissioners decided to grant each of them 2 acres of land.

The Village of Farmington

Before Enclosure: In most villages, all of the land that was used as farmland was divided into a number of large open fields. The open fields were divided roughly into rectangular sections, called furlongs. The furlongs were subdivided into long, narrow strips of about an acre each, which were owned by individual farmers. An acre was considered a good morning's plowing.

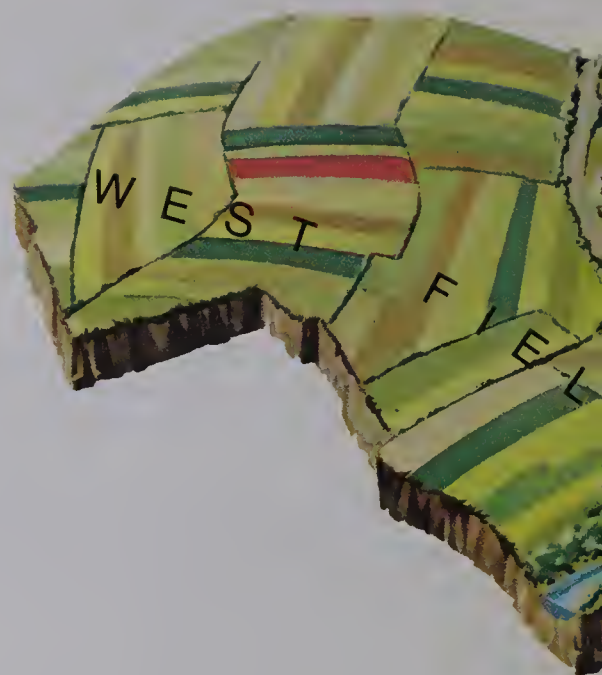
Originally, each landowner probably had a strip in every furlong. The direction of the strips was generally determined by the slope or contour of the land, so that water would drain off easily. When additional farmland was added to the fields, the new furlongs were of all shapes and sizes and the strips could meet at any angle. The open fields came to look like patchwork quilts.

There are several ways to explain why the original settlers divided the

ownership of the land in this way. Of every three fields, two would be farmed and one would not be farmed—it would "lie fallow" each year. Therefore, each farmer had to have land in the fields that were under cultivation. And each farmer would have some good and some bad land.

Another reason for this division was that plowing was done cooperatively. Each farmer contributed his oxen to the plow-team of six or seven oxen. In order to save time and labor, the furlong was plowed from one end to the other. Therefore, in case of bad weather, each farmer would have at least part of his land already plowed and ready for planting.

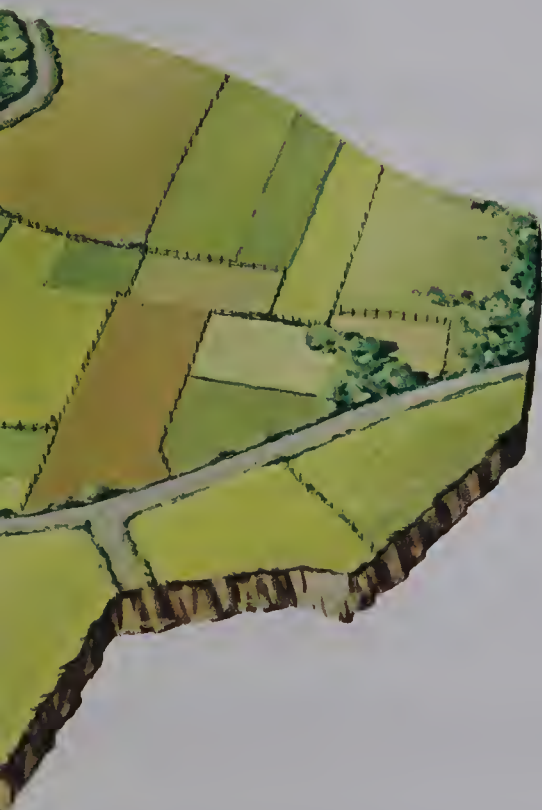
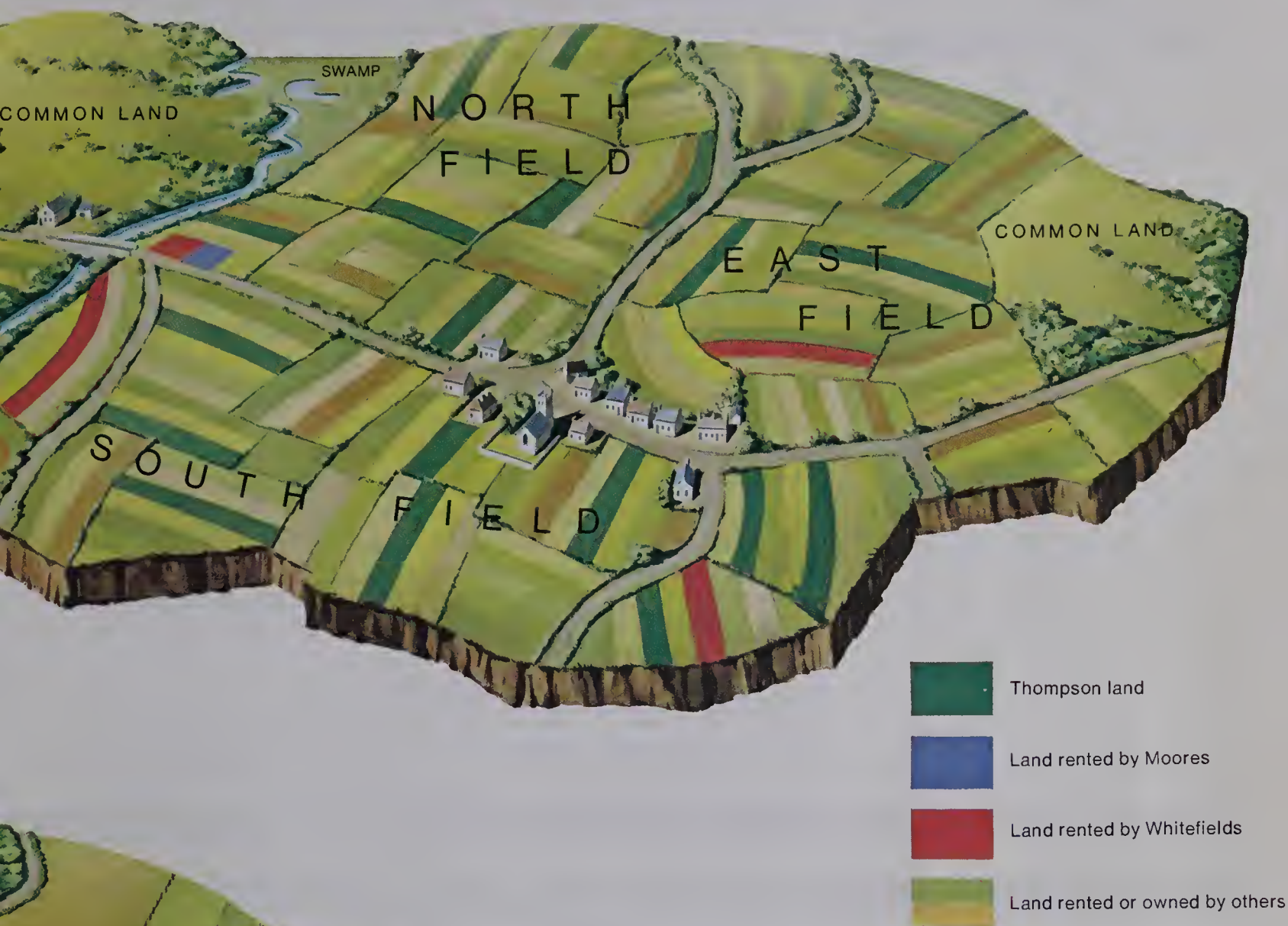
Under the open-field system, certain pasture was common land, on which the villagers had the right to graze their animals. They also had rights to gather wood in the forests and to glean from harvested fields.



After Enclosure



Before Enclosure



After Enclosure: After enclosure took place in a village, the fields were no longer divided into furlongs and strips. Instead, each landowner was given one piece of property. The size of the property was in proportion to the amount of land that a person had owned under the open-field system. The large landowners benefited most from this new way of dividing the land. They now owned large farms, which made it possible to use new, more efficient methods of farming and raising animals.

Often the common pasture, as well

as the forests, were included in the land that was divided up among the landowners. Those villagers who before enclosure had rights to use the common pasture were now given a small piece of property to make up for the loss of these rights.

However, few of them had enough animals to farm their land. Also, they could not afford to fence in their land, a requirement of the enclosure acts. Therefore, they often had to sell their plots to large landowners and either rent land or work on someone else's land for a wage.

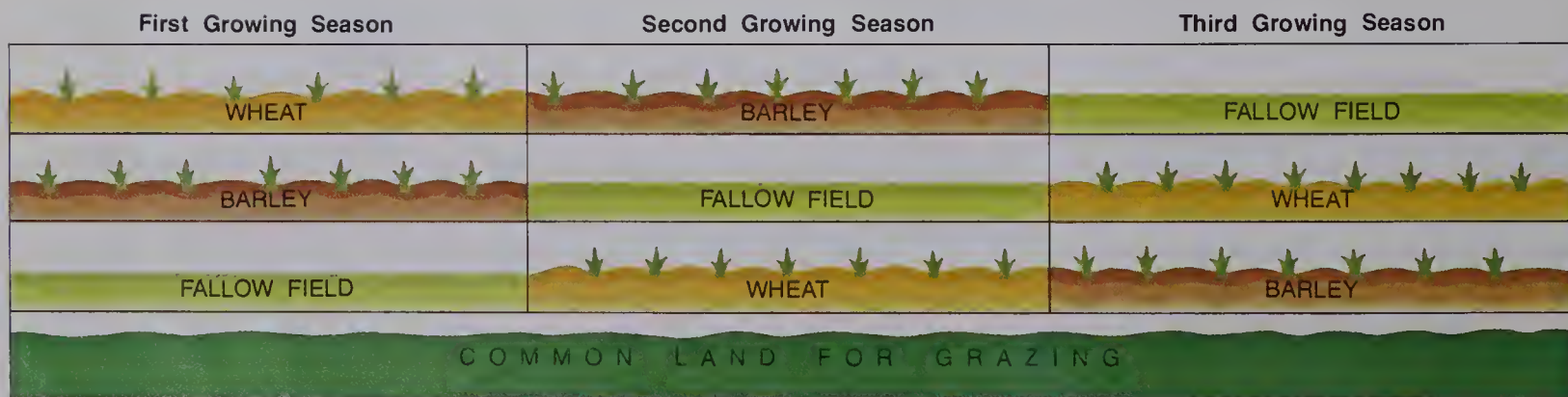
RESULTS FOR THE THOMPSONS

Now George Thompson had 300 acres of land, and he concentrated on growing wheat. His land included 50 acres of unused swampland, which he drained and brought under cultivation. He had to pay for the costs of surveying the land and fencing it in, but he quickly got his money back because he could sell the wheat for a high price.

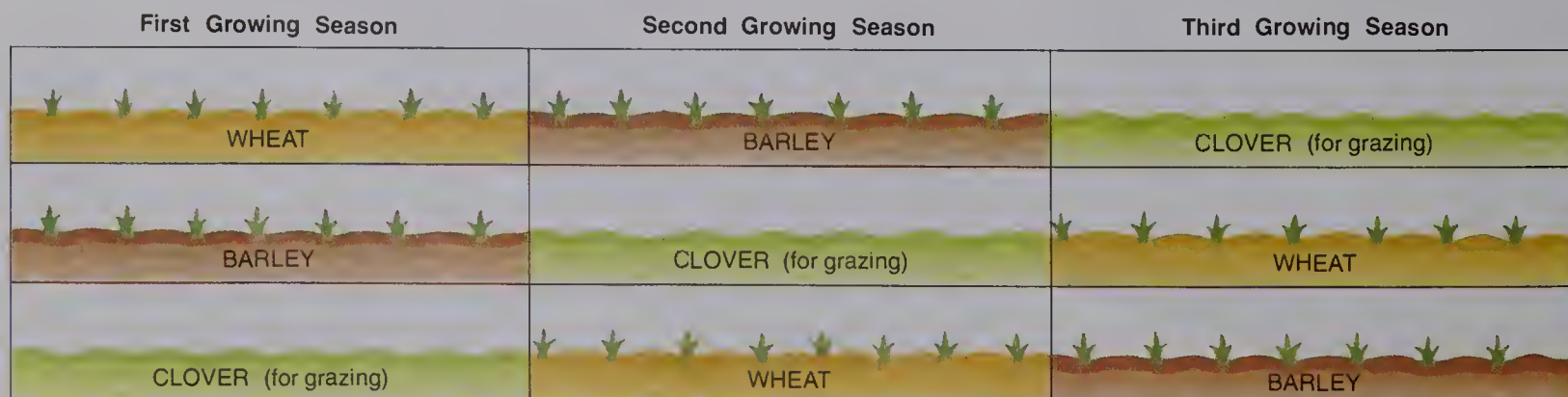
George Thompson visited other successful farmers in the area and saw that they had changed to a new system of crop rotation. Under the old system, a farmer would plant wheat on one strip of land, barley on another strip, and leave a third strip fallow (unplanted). Each year the three strips were rotated. Thus each piece of land grew wheat one year, barley the next, and then lay fallow for a year to let the soil recover.

Since the common pastures were divided up and turned into fields for crops, there was now a need for places for the animals to graze. The new system included a growing season of clover between the seasons for wheat and barley. Instead of lying fallow, every third strip was now planted in clover. Clover nourished the soil, as did the manure from the animals grazing there.

OLD SYSTEM OF CROP ROTATION



NEW SYSTEM OF CROP ROTATION



After enclosure George could farm his land – all 300 acres – more efficiently because it was all in one piece. And the new system of crop rotation increased the amount of wheat he could get from each acre of land.

As a result, George was producing twice as much wheat in 1810 as he had produced in 1790. He sold all this wheat in the rapidly growing city of London. England was at war with France during this period, and there was a great demand for wheat to feed the troops. This helped to push up the price of wheat. The price of wheat was 60 percent higher in 1810 than in 1790, so that George was earning three times as much money.

What did George do with all this money? After paying the costs of enclosure, he added some more rooms onto his house. He bought fine furniture (a mahogany table, a sofa, pictures, bookshelves) and dresses and a piano for his wife and daughters. Before, his wife had kept the cows, milked them, and cared for them. Now that the Thompsons had money, they hired the Moores’ daughter as a milkmaid to take care of the cows. Mrs. Thompson also hired servants to do the rest of the work around the house, while she spent her time in clubs and associations.

The Thompsons also did away with the practice of eating their midday meal with the servants and workers. Their son went to the university to become a minister, and their daughters went to boarding schools. Families like the Thompsons inspired this poem:

1743	1843
Man, to the Plough, Wife, to the Cow, Girl, to the Yarn, Boy, to the Barn, And your Rent will be netted. ¹	Man, Tally Ho, Miss, Piano, Wife, Silk and Satin, Boy, Greek and Latin, And you'll all be Gazetted. ²

¹ **Netted:** covered, paid for. ² **Gazetted:** written up in a Gazette, an official journal containing lists of people who have been honored.

Thinking It Through

1. Look back to your comments on enclosure (page 17). Did the results of enclosure in the lives of the Thompsons come close to your expectations?
2. Note the various changes in the Thompsons’ life style. How were these changes related to the new land system?
3. Do you think the Thompsons’ values – what they cared about – changed after enclosure? How can you tell?

HOW ENCLOSURE AFFECTED THE MOORES AND THE WHITEFIELDS

Instead of renting a one-acre plot, the Moore family now owned two acres of land. The two-acre field was not big enough for growing wheat for the family. The Moores had no animals to plow the land, and the cow could not provide enough manure to fertilize it properly. Besides, the cost of fencing in the land (which was required) would be 100 shillings, and the Moores did not have the money. As a result, the Moores were forced to sell their two acres. Once again the Moores had to rent their cottage and one-acre garden. Since there was no more common land for grazing, they also had to sell the cow.

Tom Moore continued to work for George Thompson. Since there was more work to do, Tom now earned an average of 9 shillings a week. With the cow gone, Anne, and later the children, began working in George Thompson's fields whenever he needed extra help. Together, they earned about 5 shillings a week on the average. Thus the family's total earnings now averaged 14 shillings a week. But their expenses were also higher than before.

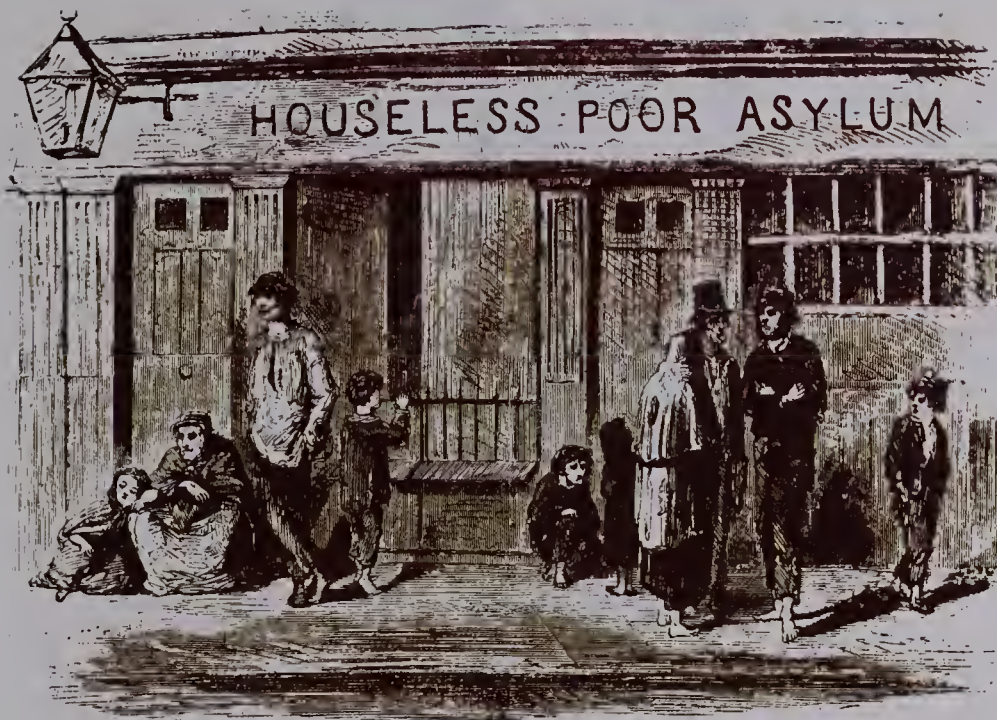
THE MOORES' AVERAGE WEEKLY BUDGET AFTER ENCLOSURE

shillings/pence

7s/ 6d	Wheat for bread (Anne could no longer glean)
1s/ —	Rent
—/ 9d	Fuel (Anne could not gather wood)
—/ 2d	Tea
—/ 4d	Sugar and salt
—/ 8d	Soap, thread, and candles
1s/ —	Milk, butter, and cheese (no cow)
1s/ 2d	Meat (twice a week)
10s/31d	= 12s/7d

A cottager family preparing food.





Home for the poor at Cripple Gate, London, 1845.

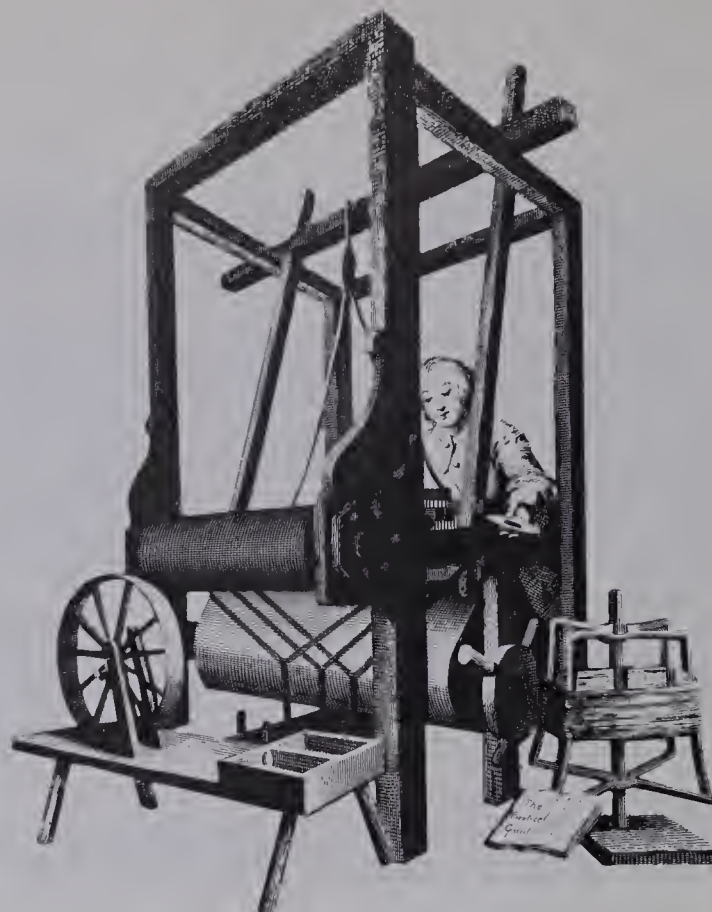
As you know, the price of wheat went up over the next twenty years. This meant that George Thompson got more money for his crops. But the Moores, who had to buy wheat, eventually had to stop eating meat, and then dairy products. When the price of wheat rose to 60 percent over the price in 1790, it took almost every penny the Moores earned just to pay for their bread.

THE MOORES' AVERAGE WEEKLY BUDGET TWENTY YEARS LATER

shillings/pence

12s/ —	Wheat for bread
1s/ —	Rent
—/ 9d	Fuel
—/ 2d	Tea
—/ 4d	Sugar and salt
—/ 8d	Soap, thread, and candles
13s/23d	= 14s/11d

Even without meat, milk, butter, or cheese in their diet, the Moores could no longer make ends meet. They were forced to turn to the parish (the village government and welfare agency) for money so they could survive.



Weaver at a loom making wool cloth. A spinning wheel, for producing the yarn used in weaving, stands in front of the loom.

The Whitefields also had to sell the two acres of land which had been granted to them. They went back to renting their cottage and one-acre garden. As there was no more common land, John could no longer rent land from the village to grow grain. Instead, he now concentrated on weaving all year round. He produced more wool and earned more money than before. At harvest time, he and the whole family worked in the fields for George Thompson. George needed so much help with harvesting that he was willing to pay more than what they could earn by weaving. The Whitefields now earned an average of 16 shillings a week. But now they, too, had to buy wheat, instead of growing it for themselves.

THE WHITEFIELDS' AVERAGE BUDGET AFTER ENCLOSURE

shillings/pence

7s/ 6d	Wheat for bread
1s/ 6d	Rent
— / 9d	Fuel
— / 2d	Tea
— / 4d	Sugar and salt
— / 8d	Soap, thread, and candles
1s/ —	Milk, butter, and cheese
1s/ 9d	Meat (three times a week)
10s/44d =	13s/8d

As the price of wheat went up, the Whitefields, too, had to cut down more and more on their expenses. They ate less meat, then none at all, then fewer dairy products. By lowering their standard of living, and working up to fifteen hours a day, the Whitefields just barely managed to survive.

THE WHITEFIELDS' AVERAGE WEEKLY BUDGET TWENTY YEARS LATER

shillings/pence

12s/ —	Wheat for bread
1s/ 6d	Rent
— / 9d	Fuel
— / 2d	Tea
— / 4d	Sugar and salt
— / 8d	Soap, thread, and candles
— / 6d	Milk and butter
13s/35d =	15s/11d

Thinking It Through

1. How did the life styles of the Moore and Whitefield families change after enclosure? How were these changes related to the new land system?
2. Would these two families have been better off if someone had "stopped the clock" before Parliament made its decision? Why or why not?
3. Did the results of enclosure in their lives come close to what you expected (page 17)?
4. List the things that you think the Moores and the Whitefields might have cared about most in the years after enclosure.

► For opinions on how enclosure affected different groups, see Research Bank No. 5, pages 106–07.

RESULTS: THE BIGGER PICTURE

What happened to the Thompsons, the Moores, and the Whitefields happened to hundreds of thousands of families in England. Between 1760 and 1815, enclosure took place in about 4,000 villages, involving 6 million acres of land, or about one fourth of all the farmland in England. The results of enclosure for England as a whole were similar to the results in the village of Farmington. Some national statistics will show how the experiences of individuals fit into a larger pattern.

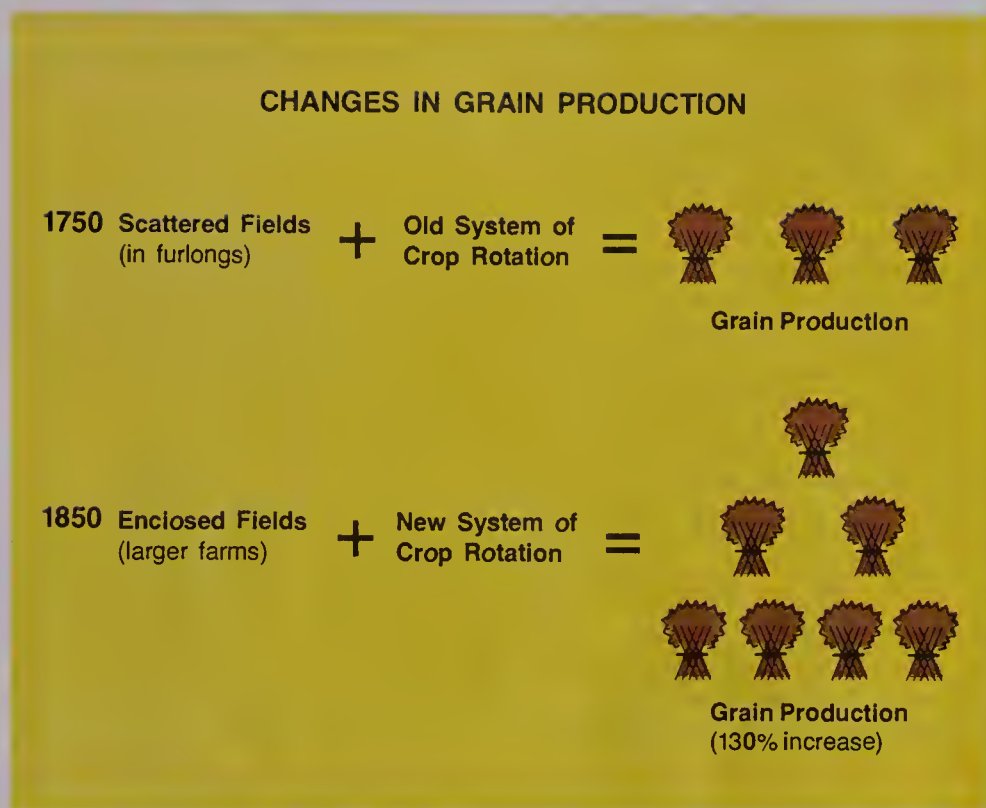
Large Landowners Got More Land

As you have seen, George Thompson increased the size of his landholdings as a result of enclosure. Throughout England, the large landowners generally increased the size of their holdings. Their holdings were enlarged by combining the property they gained through enclosure with their newly acquired shares of the common land. Small farmers were frequently unable to hold on to the small plots granted to them in the enclosures, and were forced to sell them to wealthier neighbors.

By 1850, only 4,000 farmers—less than one half of one percent of the farming population—owned 57 percent of the land. Although there is very little information available showing the distribution of land in the 1700's, most experts agree that between 1750 and 1850 members of the gentry increased their share of the farmland, usually at the expense of farmers with small holdings.

How did the change in land ownership affect the holdings of farmers like George Thompson?





Welfare Costs Went Up

The amount of money spent on welfare in all of England in 1818 was more than five times the amount spent in 1776. About half of that money went to farm laborers, like the Moores, who could no longer support themselves. By 1818, most English villages had gone through enclosure. The cost of welfare then began to go down, and it dropped by 33 percent in the 1840's.

Why would farm laborers be less able to produce enough for themselves after enclosure?

Agricultural Production Went Up

Between 1750 and 1850, the production of grain in England more than doubled. For every three bushels of grain in 1750, farmers grew seven bushels on roughly the same amount of land 100 years later. This increased output was the result of the more efficient farming techniques, including crop rotation, which were used in the larger, privately owned fields after enclosure.

During this period, however, England's population increased at an even faster rate than farm production did. Because of the great demand for grain, farmers made large profits in the early 1800's. England even had to import some of the grain needed to feed its people. As of 1850, however, 95 percent of England's population was still fed by English-grown food.

What changes made it possible for farmers to increase grain production?

SHOULD THESE CHANGES HAVE BEEN MADE?



During this period in England, there was a great deal of discussion about enclosure. Some people thought it was the best thing that could happen to the English countryside. Others thought it was a national disaster. Here are some of the arguments that were made in favor of enclosure.

□ In looking after a flock of geese, a few rotten sheep, a skeleton of a cow, or a mangy horse, poor people lost more than they might have gained by a day's work. They acquired habits of idleness and a dislike of honest labor.

(Adapted from the *Oxford University and City Herald*, September 25, 1830.)

What do these writers seem to care about most?

What is their attitude toward the poor? toward the use of land?

□ Let not the mistaken zeal of well-meaning but ignorant people persuade the sensible person that enclosure is harmful to the poor. The benefit which they are supposed to get from common lands, in their present state, I know to be very small. Nay, in many cases it does them harm, by being made an excuse for their idleness. If you offer them work, they will tell you they must go find their sheep, cut brush for fuel, or get their cow out of the pond.

(Adapted from *Industrial Society in England Towards the End of the 18th Century* by Witt Bowden.)

□ I asked various people about the present uses and value of this piece of common land. I could only discover that it is of little importance. On the whole, they said, its present value appears to be almost nothing, when compared with the benefit which would result from enclosing it. Surely it is a national scandal for such a piece of land—waste land in summer, and covered with water in winter—to remain in such a state, while we import huge amounts of grain, and at times face the fear of food shortage.

(Adapted from *Survey of Oxfordshire for the Board of Agriculture* by Arthur Young, 1809.)

The following descriptions present another picture of enclosure and its results. Each was written by a different person, about a different village or group of villages.

☐ Whoever travels through the Midland Counties and will take the trouble of inquiring, will generally be told that formerly there were a great many cottagers who kept cows, but that the land is now given to the farmers. A person who inquires still further will find that in those parishes the Poor Rates [taxes used for welfare aid] have increased much more than the average rise throughout England.

(Adapted from a letter by Lord Winchelsea to the Board of Agriculture, 1796.)

☐ In passing through a village near Swaffham, in the County of Norfolk, a few years ago, I saw the houses tumbling into ruins, and the common fields all enclosed. Upon inquiring into the cause of this sad change, I was told that a gentleman from Lynn had bought that township and the one next to it. He had divided one township into three farms, and the other into four farms, which before the enclosure were divided into about twenty farms. Upon my further inquiring as to what had become of the farmers who were turned out, the answer was that some of them were dead and the rest had become laborers.

(Adapted from *Considerations on the Exorbitant Price of Proprietors* by F. Moore, 1773.)

☐ The common land was very extensive. I talked with a farmer, and several cottagers. One of them said that enclosure would ruin England; it was worse than ten wars. Why, my friend, what have you lost by it? *I kept four cows before the parish was enclosed, and now I don't keep so much as a goose; and you ask me what I lose by it!*

(From the *Report on Bedfordshire*, 1808.)

What do these writers seem to care about?

How do their views differ from those who favor enclosure?

Arthur Young was a gentleman who often traveled throughout the country to study the conditions of English agriculture. At first, he supported enclosure as a way of making more efficient use of the land, but later he changed his mind. His reasons are given below, first by a historian, and then by Arthur Young himself.

☐ By nineteen out of twenty enclosure bills, the poor are injured, and some very badly injured. The poor in these parishes may say, and with truth: "They tell us that Parliament cares about property. All I know is that I had a cow, and an act of Parliament has taken it away from me."

(Adapted from *An Inquiry into the Propriety of Applying Wastes to the Better Maintenance and Support of the Poor* by Arthur Young, 1801.)

☐ Arthur Young, in the course of his travels, stumbled on a discovery. In those parishes where the cottagers had been able to keep a tiny patch of property, they had shown a determination to refuse welfare.

He then found that enclosure, in taking away the property of the poor, had destroyed one of the great incentives to hard work and self-respect. He decided that his earlier views had been wrong. Before the enclosures, the common lands had enabled the cottagers to keep a cow. Often this had meant all the difference between independence and hopeless poverty.

(Adapted from *The Village Labourer, 1760–1832* by Barbara Hammond, published by Longman Group Ltd. Reprinted by permission of the publisher.)

What did Arthur Young think the effects of enclosure were on the poor?

Poetry was sometimes used to express feelings about enclosure and its results—as in the following lines by Oliver Goldsmith.

Sweet smiling village, loveliest of the lawn,
Thy sports are fled, and all thy charms withdrawn;
Amidst thy bowers the tyrant's hand is seen,
And desolation saddens all thy green:
One only master grasps thy whole domain,
And half a tillage stints thy smiling plain: . . .
And trembling, shrinking from the spoiler's hand,
Far, far away, thy children leave the land.

Ill fares the land, to hast'ning ills a prey,
Where wealth accumulates, and men decay:
Princes and lords may flourish, or may fade;
A breath can make them, as a breath has made;
But a bold peasantry, their country's pride,
When once destroy'd, can never be supplied.

(From "The Deserted Village" by Oliver Goldsmith, 1770.)



How did the people who were actually hurt by enclosure – people like the Moores and the Whitefields – react?

Most of them simply accepted the changes as inevitable. There seemed to be nothing that they could do, even if they wanted to, against the power of Parliament and the large landowners.

In a few cases, however, cottagers and small landowners did try to fight back. In the village of Stanwell (see page 19), an earlier attempt at enclosure had been successfully resisted. In another case, at Otmoor, the local people took more direct action against enclosure – as described in this report written at the time:

□ Disturbances began at the end of August (1830). For about a week, straggling groups paraded the moor, cutting down fences here and there. Local sympathy with the rioters was so strong that special police refused to be sworn in.

On Monday, 6th September, 500 men, women, and children assembled from the Otmoor towns. They were joined by 500 more from elsewhere. Armed with reap-hooks and hatchets, they marched in order around the boundary of Otmoor, destroying all the fences on their way. By noon, their work of destruction was finished.

Through the broken fences, cattle were turned in to graze on all the enclosures. The villages even appointed a herder to look after them. The inhabitants of the seven Otmoor towns formed an association called "the Otmoor Association." They boldly declared that "the Right of Common on Otmoor was always in the inhabitants, and that a non-resident owner had no Right of Common thereon."

(Adapted from *The Village Labourer*, 1760–1832 by Barbara Hammond, published by Longman Group Ltd. Reprinted by permission of the publisher.)

How did the people of Otmoor respond to enclosure?

Do you think their reaction was justified?

Even in cases where people protested, or took direct action against enclosure, enclosure eventually won out. Such reactions were infrequent and of little significance. In most cases the law was passed and enclosure took place soon after.

Expressing Your Views

Using the various kinds of evidence that you have seen about enclosure and its results, record your own analysis of the changes that occurred.

1. *What happened to the way of life of the Moores, the Whitefields, and the Thompsons?*
2. *What caused these changes?*
3. *What were the advantages of enclosure? for whom?*
4. *What were the disadvantages? for whom?*
5. *Was it worth it?*

► Two modern historians' evaluations of enclosure appear in Research Bank No. 6, pages 107–08.

2. Forces of Change



Changes in Agriculture 1700–1830

The Industrial Revolution



Changes in Industry 1760–1850

In the English countryside, as we have seen, the two most important activities were agriculture (farming) and cottage industries (such as weaving). We have seen that enclosure brought about many changes in agriculture. Common lands were divided up. Big farms got even bigger. More laborers worked for large landowners, instead of for themselves. Grain production more than doubled between 1750 and 1850.

At the same time that these changes were occurring, another set of changes was beginning to affect cottage industries. English society was the first to develop a technological, industrialized way of life, a life style based on mechanical inventions and large industries. The changes in agriculture that we have witnessed did not cause this new industrialized way of life. People did not decide to build factories in order to hire those landless people who now needed jobs to make money. In fact, most people continued to be employed on the land. What, then, caused England to develop into the world's first industrialized society? What were the ingredients of its industrialization? As we follow this new set of changes, we will be searching for answers to the same three basic questions:



What happened?

What caused it to happen?

Was it worth it?

In searching for answers to these questions, we will again focus mainly on the lives of individuals. In this section of the Unit, we will be dealing most often with real people, with some of the individuals who actually played a part in the changes that occurred. As you read about these people, the “pioneers” of industrialization, be constantly on the lookout for evidence that may help you to answer the basic questions. In order to keep track of this evidence, you might try making two lists, adding to them as you go along:

1. What did it take for England to become industrialized? What were the ingredients of successful industrialization?
2. What did it take for an individual to “make it” in an industrial system? What did it take to survive and succeed within that system?

► For an overview of the reasons why the Industrial Revolution began in Great Britain, see Research Bank Nos. 7–8, pages 109–11.

In order to see what happened, we will look at Lancashire, a county in a different part of England. In Lancashire, families like the Whitefields earned a living by spinning and weaving cotton, instead of wool, in their homes. Thus the cotton industry was organized very much like the wool industry.

In other ways, however, the cotton industry was different from the wool industry. While raw wool came from sheep raised in England, the English climate was too cool for growing cotton. All raw cotton had to be imported. In the 1700's, most of it came from the Middle East and the West Indies.

At that time, cotton cloth was more expensive than wool. It was also rougher, more difficult to sew, and less comfortable to wear. In addition, some cotton cloth was imported from India, which produced cottons of much better quality and less expensively than did English weavers. While large amounts of English woolen goods were sold both at home and abroad, there was little demand for English cotton goods. In fact, total sales of cotton goods in 1760 amounted to only 6 percent of the value of wool production.

MAKING RAW COTTON INTO THREAD

1. Picking seeds and husks out of cotton. 2. Beating cotton to remove dirt. 3. Carding cotton to separate and straighten fibers. 4. Spinning cotton into yarn. 5. Twisting and winding yarn. 6. Doubling yarn to make thread for weaving.





PROBLEMS AND SOLUTIONS

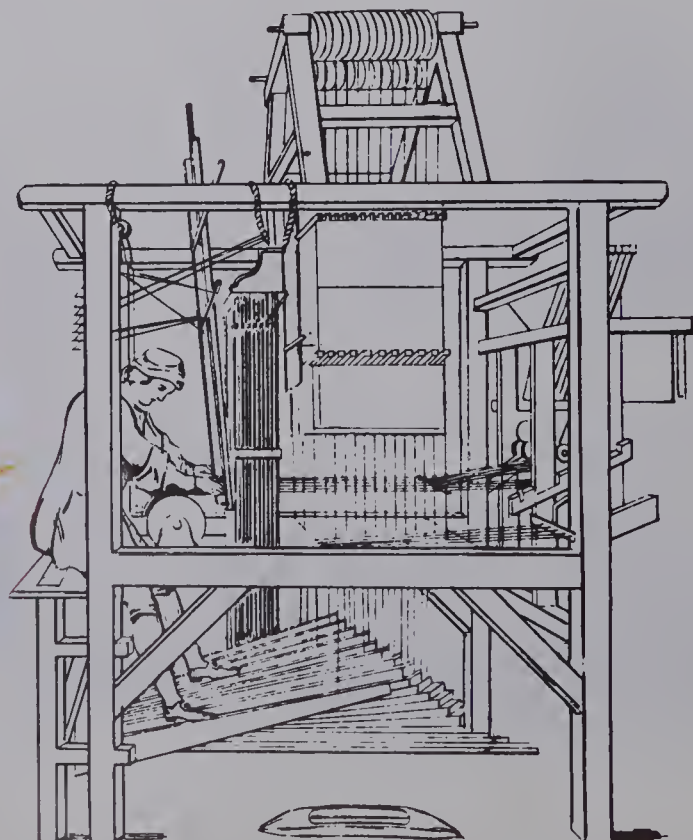
These were the facts of life in the slow-moving “cotton industry.” Many people simply accepted it this way but there were others who sought improvements. Here are the stories of some of the people who brought about changes in cotton manufacturing.

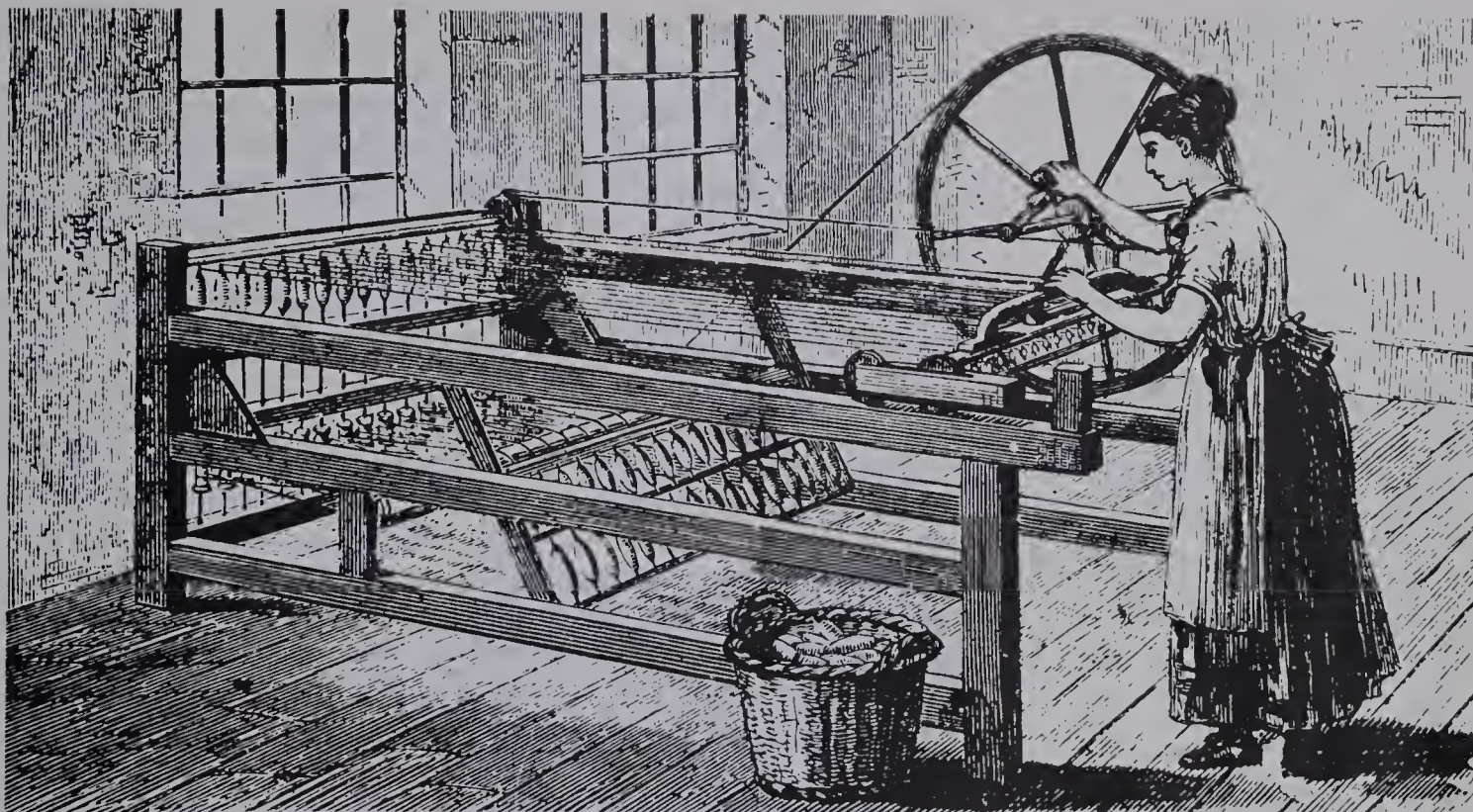
A New Invention: The Spinning Jenny

In the home workshops of Lancashire, the spinning of raw cotton into thread was a long, slow process. With a spinning wheel, it took five or six times as long to make the thread as it took to weave the same thread into cloth. Thus, it would take five spinning wheels and five spinners to keep up with one weaver at a loom.

In about 1765, a weaver and carpenter named James Hargreaves built a new spinning machine, calling it the jenny. Some say it was named for his wife; others say the name came from “gin,” a Lancashire word for “machine.” The jenny had four vertical spindles and could spin four threads at the same time. (Later, jennies had up to 120 spindles.)

Hargreaves’s jenny was a simple machine, easy to build, and small enough to fit in anyone’s house. It was operated by a large wheel that could be turned by hand. It was made of wood and other materials that were readily available. Almost anyone could build a jenny, since it required no special skills and little money for materials. Cotton spinners all over Lancashire began to put aside their spinning wheels and to build jennies.





Improved model of Hargreaves' spinning jenny. By cranking the wheel, a spinner operated all of the spindles at once. Notice the way the jenny stretched the cotton fibers, which produced fine thread.

The Inventor in Society

Under English law, any individual who invented a new machine or manufacturing process could apply to the government for a *patent*. A patent provided legal protection for the inventor. It guaranteed that the inventor owned the invention, and no one else could legally copy it for a certain number of years.

In 1770, five years after building the first jenny, Hargreaves tried to get a patent for his invention. If the government granted him a patent, no one else would be able to make a jenny without his permission. He could go into business making and selling jennies. Or he could license other people to make jennies, and charge them a fee. Or he could sell his patent rights to someone else, for as much money as he could get.

As it turned out, Hargreaves was denied a patent. The courts ruled that since he had already sold some jennies, he could not apply for a patent. (The law stated that an inventor could only apply for a patent before, not after, beginning to sell the invention to other people.) Still, Hargreaves was able to start a small business of his own, and when he died, he left about £4,000 to his heirs.

How did the jenny affect Hargreaves? the home weavers? the cotton merchants?

If Hargreaves had been granted a patent, what difference would it have made to him? to other weavers?

Do you think patents are a good idea? Why or why not?

◆ For a description of James Hargreaves and of the spinning jenny written in the early 1800's, see Research Bank No. 9, pages 111–12.

The Next Step: A Better Spinning Machine

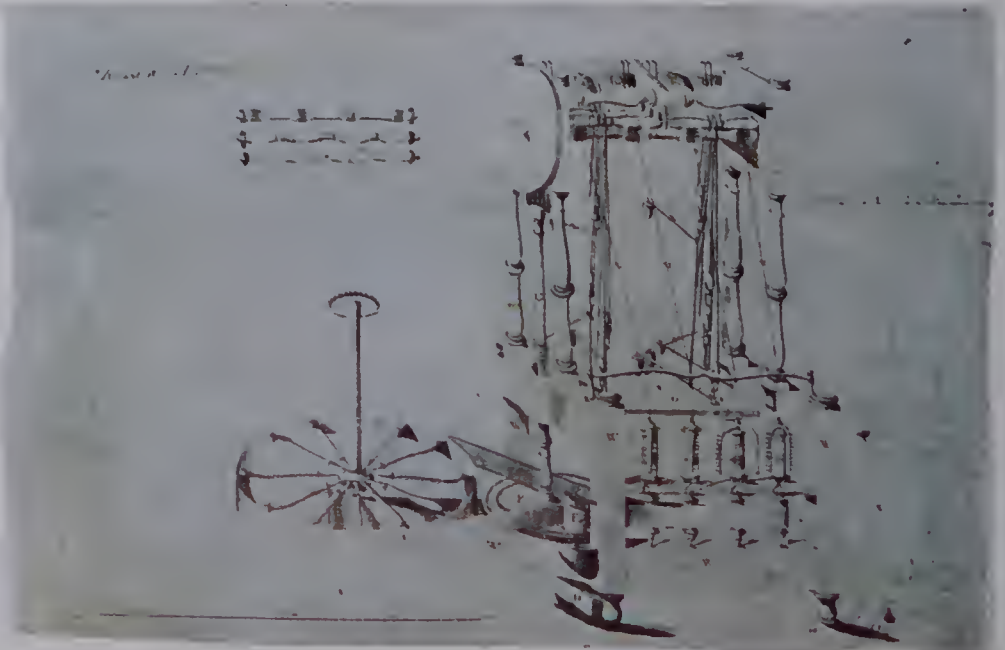
Another problem holding back the cotton industry was the high cost of the finished product. Most people simply could not afford to buy cotton cloth. One reason for the high cost was that cotton thread was too weak to be used alone. While cotton was used for the short threads running across the cloth (the weft), linen had to be used for the threads running lengthwise (the warp). Linen was stronger than cotton, but it was also more expensive.

In 1768, another Lancashire man, named Richard Arkwright, built a machine that would solve this problem. Arkwright's new spinning machine was called a frame, or water-frame. The frame produced a much stronger cotton thread than the spinning wheel or jenny did. Since this thread could be used for the warp as well as the weft, it would make cotton cloth cheaper than before. Arkwright obtained a patent for the frame in 1769.

The frame was a much bigger and heavier machine than the jenny. The jenny, like the spinning wheel, could be operated by hand. The frame, however, needed a greater source of power, such as water power or horse power, to turn its machinery.

The First Cotton Mill

In 1771, Arkwright formed a business partnership with two other men. That is, they agreed to share expenses as well as profits, if any. Combining their resources, they built a cotton mill, a factory that would hold a large number of spinning machines. They located the factory in a small town called Cromford in Derbyshire, on the Matlock River.



Patent drawing of Arkwright's spinning machine, the frame, 1769. Cotton fibers were twisted between the rollers, producing strong thread.

They chose this location because of the rapidly flowing river, which was needed to provide water power to run the machines. The factory also needed workers to look after the machines, and they came from nearby towns and villages. Now for the first time, the spinning of cotton was done on a large scale, rather than in homes.

By 1779, this first cotton mill had several thousand spindles and 300 workers. It proved so successful that Arkwright built several more mills. The biggest one, in Manchester in Lancashire, employed 600 workers. Other people also began to build cotton mills. By 1788, there were 119 cotton mills in England (41 of them in Lancashire), plus another 19 mills in Scotland.

What problem in the cotton industry did the frame solve?

How did the invention of the frame lead to the first cotton mill?

What factors controlled where early factories were located?



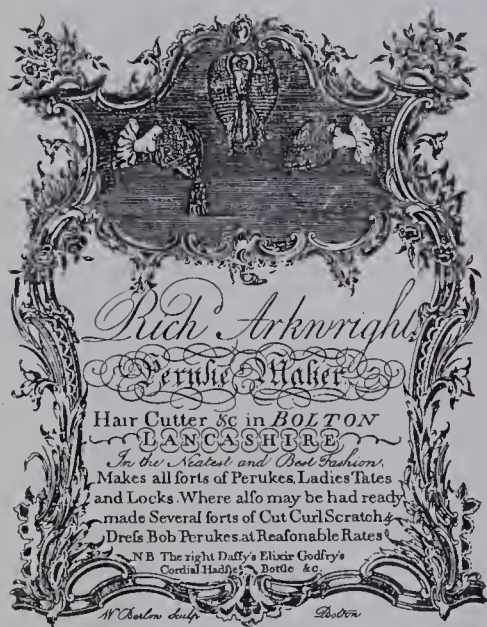
THE STORY OF RICHARD ARKWRIGHT

Richard Arkwright—the person who patented the frame and built the first cotton mill—proved to be a highly successful businessman. At the same time, his activities helped to move England further toward industrialization. A closer look at his life story will help us see how he became successful.

Getting Started in Business

Richard Arkwright was born in Lancashire in 1732, the youngest child in a large and poor family. At about the age of eleven, he became an apprentice to a barber and wig-maker. That is, he agreed to work for the barber for a period of seven years, in exchange for his room and board, a little pocket money, and training as a barber. This was a common practice at that time; most young boys (except those in farming) became apprentices in some trade at about ten or eleven.

When he was eighteen, Arkwright set up a small barbershop of his own. He married, but his first wife died within a few years. He remarried and his second wife had a little money, which he used to go into business as a hair-dealer. He traveled around the countryside buying the hair of young girls, which he dyed and then sold to wig-makers, for wigs were very fashionable at the time.



Arkwright himself had never been a weaver and had no training or experience in the cotton industry. But he was a careful observer. He picked up a great deal of information about the cotton industry from the talk of people in his barbershop and during his business trips throughout Lancashire. He saw how useful a new spinning machine, like the frame, would be. He had no special skill or experience with machinery. But he hired an assistant named John Kay, a clockmaker by trade, who had the mechanical skills needed to build the frame.

Who Invented the Frame?

Although Arkwright was granted a patent for the frame in 1769, others went ahead and made copies of it. When they refused to pay him for the patent rights, Arkwright sued them. The case dragged on in the courts for many years. It came to a dramatic conclusion in 1785, with the appearance of a witness named Thomas Higs, who claimed that he was the real inventor of the frame!

Higs testified that he originally built a model of the frame in 1767, with the assistance of John Kay. Arkwright had then hired Kay and built the frame, using Kay's knowledge – thus stealing Higs's invention and taking the patent for himself. Higs testified that he had talked with Arkwright about this question in 1772:

☐ I told him it was my invention. Suppose it was, he says. If someone has found out a thing, and begun a thing, and does not go forward but lays it aside, then another person has a right in so many weeks or

months to take up the idea and get a patent for it.

(Adapted from *The Industrial Revolution in the Eighteenth Century* (New Revised Edition) by Paul Mantoux.)

Do you agree with Arkwright's argument? Why or why not?

Do you think he should have acted differently? If so, how? Why?

The Rewards for Arkwright and Higs

John Kay confirmed Higs's story in court, and Arkwright could not produce evidence to contradict it. His patent was canceled. Nevertheless, he continued to prosper and gain honors. In 1786, he was knighted by King George III. When he died, in 1792, he left his heirs £500,000. Arkwright had come a long way from the barbershop.

Thomas Higs, on the other hand, never managed to profit from his own invention. He was a simple, uneducated worker, with no business ability. He tried a number of times to set up a cotton mill, but he failed each time.

Why do you think Arkwright succeeded, while Higs failed?

Which do you think is more important, the invention itself or its application?

THE STORY OF SAMUEL CROMPTON

The next step forward was made by a weaver named Samuel Crompton. As you read about him, try to compare Crompton with Arkwright – what they were like, what they did, and what happened to them. What part, if any, did personal qualities play in the overall process of industrialization?



A Way to Produce Stronger Thread

Samuel Crompton was born in Lancashire in 1753. At the age of sixteen, he began spinning cotton for his mother (his father had died young). Within a few years, he began using Hargreaves's new invention, the spinning jenny.

One problem that bothered Samuel Crompton and all other cotton spinners was breaking thread. Often Crompton's mother scolded him for failing to spin as much as he should, because the thread broke so easily and slowed him down. The problem was that the jenny spun thread of fine quality, but little strength. The frame, on the other hand, produced a thread that was strong, but rough and uneven. A combination of these two qualities was needed. Starting in about 1774, Crompton began to experiment with ways of making a thread that was both fine *and* strong.

Why did Crompton want to invent something new?

How do his motives compare with Hargreaves's? with Arkwright's?

☐ Because of the imperfect state of cotton spinning, for the next five years (1774–79), I added another labor to my work as a weaver. That is, I constantly tried to discover a more perfect principle of spinning.

At last I succeeded in achieving this, my greatest desire, at the expense of every shilling I had in the world.

(Adapted from *Samuel Crompton* by Hector Charles Cameron. Batchworth Press, 1951.)

Crompton spent so much time experimenting in his attic at night that people in the village thought he was practicing alchemy or witchcraft. They even called the attic "Sam'l's conjuring room." By 1779, however, he had designed and built a new machine, which he called a mule. Like a mule, which is a cross between a horse and a donkey, Crompton's mule was a cross between the jenny and the frame. Like the jenny, it produced a fine, even thread. Like the frame, it produced a thread strong enough for both warp and weft, a thread which could be handled without breaking.

Crompton was very pleased with his new invention. To celebrate, he had a silver watch made, at a cost of £5. (How long would it take a weaver, such as John Whitefield, to earn £5?)

Putting an Idea into Practice

Now that Crompton had invented the mule, he had to decide what to do with his invention. He considered applying for a patent, but he did not have the money for expensive legal fees. He knew that other cotton manufacturers would probably fight his patent in the courts, involving him in long, costly lawsuits. Besides, he was afraid his case for a patent was weak, since the mule was really just a combination of the jenny and the frame. Meanwhile, news of his invention was spreading rapidly.

□ I was beset on every side by people of all kinds, coming from a long distance away, as well as by my neighbors. There were so many persons wanting to see the machine that, in trying to keep them away, I could not do my work. Their curiosity was excited by the superior quality and fineness of the yarn I spun. Such fine yarn had never been seen before, and it was something which the cotton industry was very much in need of at that time.

To destroy what had cost me so much labor and expense I could not think of. What to do I knew not. The leaders of the cotton industry made me an offer. If I would let the machine be shown to the public, they would all contribute a generous sum of money.

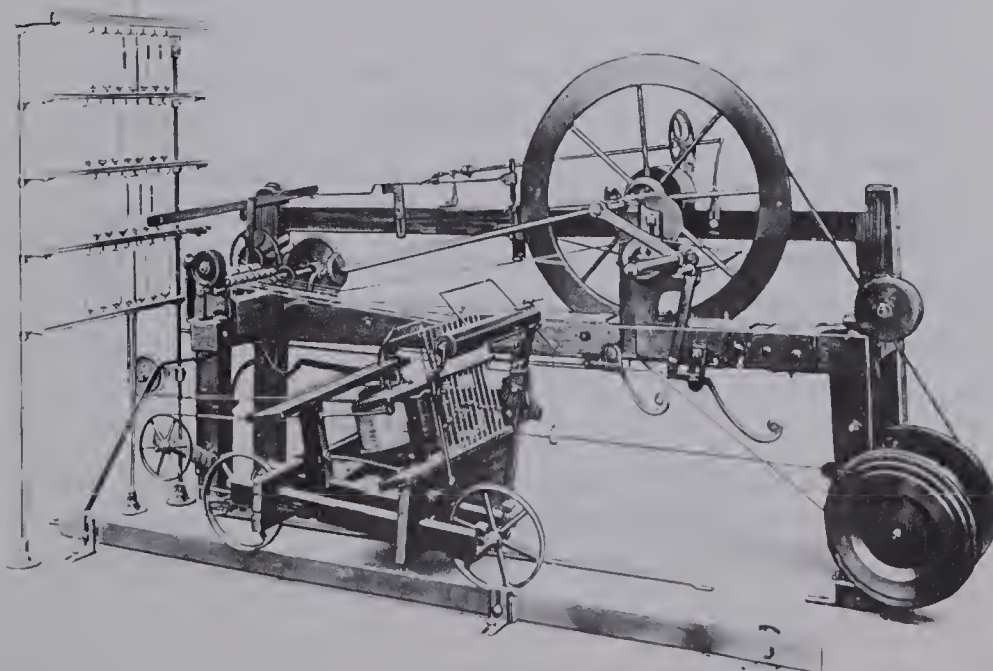
(Adapted from *The Early English Cotton Industry* by George A. Daniels. Published by Manchester University Press. Reprinted by permission of Manchester University Press and Augustus M. Kelley Publishers.)

What choices did Crompton have?

What do you think Crompton should have done with his invention?

Why?

Crompton agreed to show his invention to the public. In exchange, the “generous sum of money” turned out to be only £60, barely enough to cover his own costs in building the machine. Use of the mule spread rapidly throughout Lancashire, both in home workshops and in factories. By 1812, nearly 80 percent of all English cotton was spun on the mule. English cottons were now the finest in the world, better than those from India.



Crompton's mule, a combination of the spinning jenny and the frame.

THE INVENTOR AND THE INDUSTRY

Samuel Crompton continued to earn his living as a cotton weaver, using his own machines. Robert Peel, one of the large cotton manufacturers, offered him a job as head of the engineering shop in one of his factories, with the promise of an eventual partnership in the firm. Crompton turned him down.

Samuel Crompton was skilled at his craft. He wanted to be his own boss and to do the work he loved – weaving fine cottons. He produced cotton cloth of the finest quality, with unusual patterns and designs. He was also a violinist, playing in the local orchestra. But he had no mind for business. He hated the bargaining and give-and-take of the business world. Rivals copied his patterns on cheaper material and undersold him. When a merchant at the Cotton Exchange in Manchester tried to haggle with him over prices, Crompton packed up his cottons and left.

Crompton was upset by publicity and any interruption of his privacy. Once, a friend brought a German nobleman to visit

Thinking It Through

- 1. Why did cotton manufacturers oppose the granting of patents to Crompton, as well as to Hargreaves and Arkwright?*
Were the manufacturers right to act as they did? Explain.
- 2. If you had been in Crompton's place, would you have withheld the mule from the public until the cotton manufacturers paid a much larger sum?*
Would the same be true if you invented a new toy? a new medicine?
- 3. What do you think Crompton's values were? Compare these values with those of Richard Arkwright.*
- 4. Later on, Crompton made a machine which speeded up the process of carding (preparation of raw cotton for spinning). But he destroyed it with an ax, shouting, "They shall not have it!"*
– Why do you think he did this? Whom did he mean by "they"?
– Do you think that it was Crompton's fault that he did not get rich?

him. When Crompton saw them coming, he rushed upstairs and jumped into bed. The friend came into Crompton's room and said, "You must meet this visitor. I'll bring him up." Crompton replied, "If he comes into this room, then I'll go under the bed."

Another time, when he was visiting Glasgow, Scotland, he found out that a dinner was going to be held in his honor. As the hour of the dinner approached, he panicked and left town. He simply wanted to be left alone, to live and work without being disturbed.

At one point, Crompton had as many as fifty-three weavers working for him, using his machines. Still, he never grew rich from his invention. Finally, in 1812, the English Parliament granted him £5,000 as a reward for his contribution to the cotton industry. He used this money to pay his debts, then sold his business in 1819, and lived on his savings until his death in 1827.

A Modern Parallel

1. *Suppose that you had an idea for a new invention today. How could you go about putting your idea into practice?*
2. *To find out more about how the system works today, try to arrange to talk to some present-day inventors and business people. People you might want to interview could include:*
 - *an engineer or scientist working for a big corporation*
 - *someone with a small business, who designs and manufactures his or her own products*
 - *someone doing research at a nearby hospital or university*
 - *a lawyer who specializes in patents*

Before the interview, be sure to prepare a list of questions you want to ask, such as:

- *Where do the most important inventions come from today?*
- *What does it take to produce a successful new product?*
- *What are the rewards for a successful invention? to the person with the idea? to the person or company who puts up the money? to any other people involved? (What other kinds of people are likely to be involved?)*

What seem to be the ingredients of success in our industrial system today? In what ways are these the same as those in the late 1700's? How are they different? Why?

SOLVING THE PROBLEM OF POWER



James Watt

As machines became bigger and more complicated, they needed an outside source of power to run them. Before industrialization, four kinds of power were used: human power, horse (or other animal) power, wind power, and water power. Human power and horse power were too weak to turn the new machinery. Wind power was strong (up to 5 or 10 horse power), but not steady; obviously, the machinery could operate only when the wind was blowing. That left water power. As we have seen, the first cotton mills were located on rivers and streams. The flowing water turned a giant wheel, which then turned the machinery inside the factory. Thus the factory was totally dependent on the flow of water.

Water power had its problems. If there was not enough rain, the flow of water might slow down, and the wheel might slow down or stop. If the water froze in winter, it could break the wheel. Spring floods could turn the wheel too fast. For these reasons, factories had to close down for two or three months out of the year. What was needed was a source of power that was strong, steady, and reliable.

Power was needed not only for the cotton industry. Iron foundries needed power to pump giant bellows, which kept the furnaces hot. Coal mines needed power to pump water out of the mines. While a cotton mill could be located on a river, a mine obviously had to be located wherever the coal was. Therefore, in coal mines a steam engine, fueled by coal, provided the necessary power.

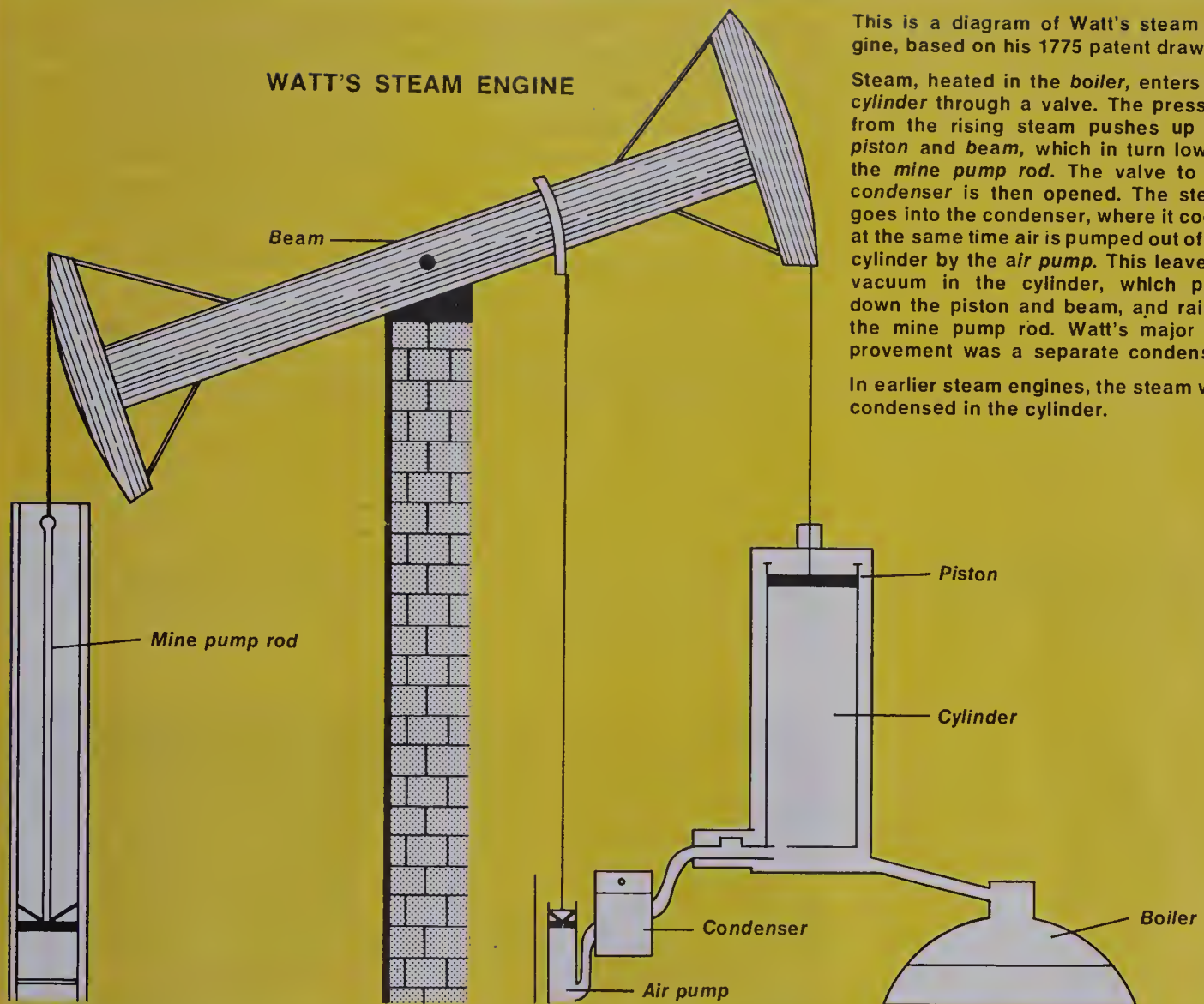
The main problem with existing steam engines was that the cylinder had to be heated and then cooled for every stroke of the piston. This meant that the piston could only move very slowly. It also made the engine very costly to run, as a great deal of coal was needed to keep reheating the cylinder.

James Watt's Solution

In the late 1750's, a young Scot named James Watt began to experiment with the steam engine, trying to improve it. Watt was born in Scotland in 1736. His father was an educated man, a carpenter, architect, shipbuilder, and dealer in ships' supplies. As a boy, Watt developed a love for working with metal and scientific instruments. At the age of twenty-one, through his mother's connections, he got a job making scientific instruments at the University of Glasgow. In his spare time, he worked on his own experiments. Then in 1764, James Watt found a way to improve the steam engine.

How does Watt's background compare with those of the other inventors you have read about?

WATT'S STEAM ENGINE



This is a diagram of Watt's steam engine, based on his 1775 patent drawing.

Steam, heated in the *boiler*, enters the *cylinder* through a valve. The pressure from the rising steam pushes up the *piston* and beam, which in turn lowers the *mine pump rod*. The valve to the *condenser* is then opened. The steam goes into the condenser, where it cools; at the same time air is pumped out of the cylinder by the *air pump*. This leaves a vacuum in the cylinder, which pulls down the piston and beam, and raises the mine pump rod. Watt's major improvement was a separate condenser.

In earlier steam engines, the steam was condensed in the cylinder.

Although Watt now had the technical solution, he could not actually build a working steam engine. That would require skilled workers and a great deal of money. In the course of his experiments, he had already run up debts of over £1,000.

In 1767, therefore, Watt entered into a partnership with John Roebuck, who owned an ironworks near Glasgow. Roebuck paid most of Watt's debts, in exchange for the rights to two thirds of the profits from the steam engine. But Roebuck did not have the skilled workers needed to build the engine, and his firm ran into financial difficulties. Watt had to drop his experiments for a while and do surveying to earn a living.

In about 1769 or 1770, James Watt was approached by a business owner named Matthew Boulton. Born in 1728, Boulton had attended school until the age of fourteen and then gone into his father's toymaking business. Boulton had greatly expanded the business, manufacturing watch chains, buckles, steel jewelry, and other fashionable items. He had built a large factory, which employed 600 workers, just outside the city of Birmingham. Hearing of Watt and his work on the steam engine, Boulton decided to offer him a new business arrangement:

□ To produce the most profit, my idea is to build a factory near my own. I would erect all the conveniences necessary for the completion of the engines. From this factory, we would serve the whole world with engines of all sizes. By this means, and with your assistance, we could hire and instruct the best possible workers. Using more excellent tools than would be worth-

while to obtain for one single engine, workers could build the engine 20 percent cheaper than it would otherwise cost. At the same time, there would be as great a difference in accuracy as there is between a blacksmith and a mathematical instrument maker.

(Adapted from *James Watt and the Industrial Revolution* by H. W. Dickenson, published by Longman Group Ltd. Reprinted by permission of the publishers.)

What business qualities does Boulton show in this letter? in his previous career?



At first Watt stayed with Roebuck, but Roebuck finally went bankrupt. Boulton offered to cancel a £1,200 debt of Roebuck's, if Roebuck would release Watt to Boulton. Roebuck agreed, and Watt joined Boulton in May 1774. Six months later, with the help of Boulton's skilled metal workers, Watt's steam engine was finally built. Watt and Boulton obtained a twenty-five-year patent for the steam engine in 1775.

Orders for steam engines came in—for coal and tin mines (to pump out water); for ironworks (to work bellows which kept the furnaces hot); and after 1785, for cotton mills. By 1800, there were 481 steam engines operating in Great Britain, plus another 15 elsewhere in Europe, every one built by Boulton and Watt.

Analyzing the Evidence

1. *What were the advantages of the steam engine over earlier forms of power?*
2. *How would the use of steam engines affect the location of factories?*
3. *Why were other people unable to copy the steam engine, as they had copied the jenny, the frame, and the mule?*
4. *What were the contributions of Watt and Boulton toward producing the steam engine? What qualities did each partner have?*
5. *In your opinion, was one of them more creative? more important to the partnership? Why or why not?*

INGREDIENTS OF INDUSTRIALIZATION

From the 1760's to 1850, the cotton industry in England grew and changed in a way that had never before happened in any industry, in any country. Cotton, once of little importance, seemed to dominate English industry. As of 1830, half of English exports were cotton products. By 1850, one out of three factory workers was employed in cotton production (500,000 out of 1.5 million). How did this dramatic change in the cotton industry come about?

Advances in Technology

We have followed a chain of new inventions—the spinning jenny, the frame, and the mule. We have seen how these machines were concentrated in factories, where they could be run by water power. Finally, we have seen how the steam engine met the need for a steady source of power. The steam engine also permitted factories to be concentrated in cities, rather than scattered along rivers and streams.

Steam-driven machines greatly increased the amount of cotton cloth that could be produced. By machine, a factory worker could spin 200 times as much cotton in 1812 as a cottage worker could spin in 1760. Thus, one reason for the growth of the cotton industry was the increased productivity of workers.

Increases in Agriculture

The growth of the cotton industry was also aided by some of the changes we have seen in the rural areas, namely, increased food production. As workers became concentrated in factories and cities, they could not produce food for themselves, as cottage weavers had done. The increase in grain production, which usually followed enclosure, made it possible to feed these workers. Without this agricultural surplus, the growth of cities would have been slowed down.

Importing Raw Materials

This expansion of the cotton industry would not have been possible without raw cotton, which, you will recall, had to be imported from other parts of the world. As the production of cotton cloth increased, more and more raw cotton was needed, and new cotton-growing areas had to be cultivated. The most important of these new areas was the southern United States, which produced more than half of England's raw cotton after 1815. In the South, cotton was grown on large plantations, as

well as on small farms, often using the labor of slaves originally brought from Africa. English merchants bought the cotton and had it shipped to England to be spun and woven.

World Markets for English Products

Obviously, there would be no point in producing more cotton unless somebody was willing to buy it. Because of the improved strength and quality of English cottons and the lower prices, more people wanted to buy cotton goods and could afford to buy them. Thus, another reason for the growth of the cotton industry was a growing market for cotton goods, both in England and in other countries.

England depended on the outside world not only for raw cotton, but also for markets for finished cotton cloth. Without foreign markets for English cottons, the growth of the cotton industry, and perhaps industrialization altogether, would have been considerably slower.

Cargo being loaded and unloaded on Princes Dock in the bustling port of Liverpool, early 1800's.



British Cotton Trade Routes About 1850

-  Imports of raw cotton
-  Exports of cotton cloth
-  British territory about 1850



The English cotton industry, as we have seen, depended on trade with the rest of the world. All of the raw cotton was imported, and much of the finished cotton cloth was exported.

International trade in the 1800's was dominated by English merchant ships. England also held colonies throughout the world, including India and Canada, and the English navy was the strongest in the world. England's leading rival, France, had been defeated in 1814, and France and Spain had both lost their colonies in America.

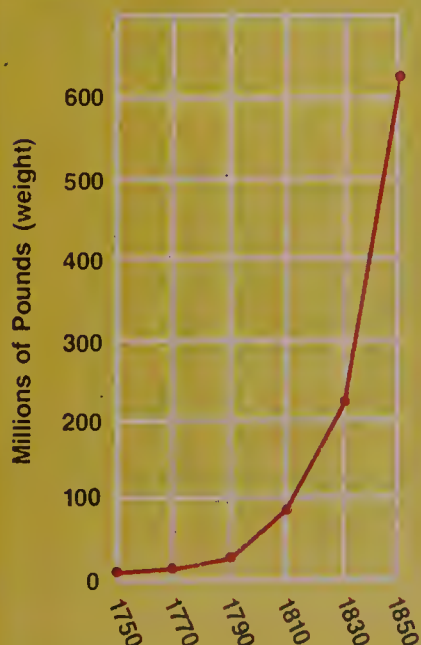


What might be the effect on the English cotton industry if

- England lost a naval war to France?*
- Spain regained its colonies in South America?*
- the United States outlawed slavery?*

Can you add anything more to your list #1 (page 35): What did it take for England to become industrialized?

IMPORTS OF RAW COTTON



PRODUCTION OF COTTON CLOTH



MARKETS FOR ENGLISH COTTON CLOTH IN 1840

England	38%	Africa	6%
Latin America	22%	United States	3%
Europe	16%	China	2%
East Indies	11%	Rest of the world	2%

In 1750, the cotton cloth exported from England was valued at £45,000. By 1850, the value of cotton cloth exports amounted to £30,000,000.

WHAT HAPPENED TO THE WEAVERS?

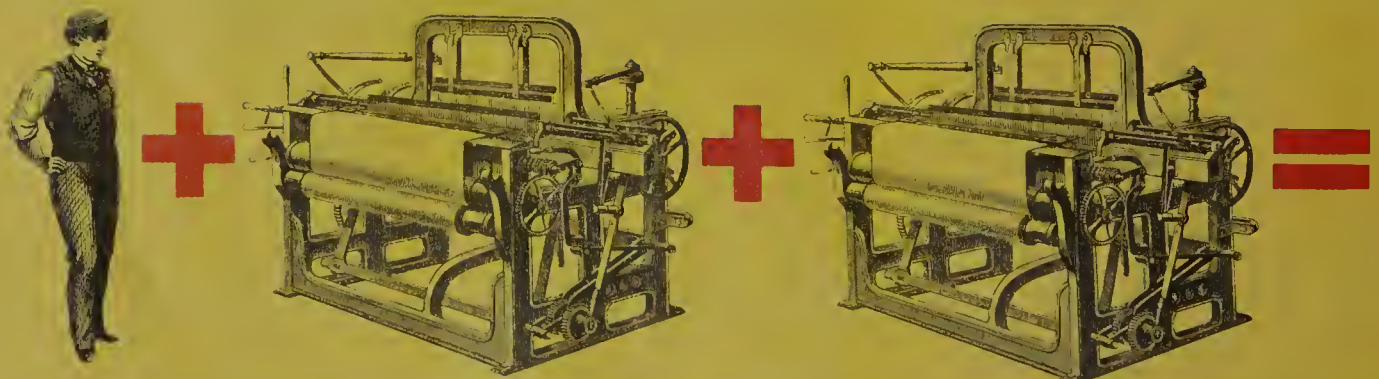
We have seen what happened to the inventors. But how did the new inventions affect the lives of thousands of cottage weavers, unknown outside their own villages, who lived and worked in Lancashire?

In general, handloom weavers welcomed the invention of the spinning jenny. With this new machine, they could spin more cotton in less time. By increasing their output of cotton, they could earn more money.

With the invention of the frame, and then the mule, more and more spinning was done in factories—especially after the steam engine became practical. The actual weaving of cotton cloth, however, was still done on handlooms, by skilled weavers working in their own homes or workshops. Improved strength and quality, as we have seen, helped to increase the demand for cotton cloth. The cotton industry was booming. By the 1790's, the cotton weavers were earning more money than ever. While the number of workers in the cotton mills was going up, so was the number of cottage weavers.

By 1806, however, power looms became practical. Like the spinning machines, they were run by steam engines, and it required no special skills to look after them. But unlike the spinning machine, the power loom competed directly with the main job of the cotton weavers. As of 1823, a fifteen-year-old child could look after two power looms, which could weave three and a half times as much cloth in a day as a skilled weaver could weave on a handloom. Thus, cotton cloth could be produced much more cheaply by machine.

In order to see what happened to the handloom weavers, and the choices they faced, we will take a look at two typical weavers named John and Peter Wilkes. Like the Moores and the Whitefields, these particular individuals are imaginary, but their story is true. It has been pieced together out of what we



know must have happened to a great many cotton weavers in Lancashire in the early 1800's.

Changes and Choices

The year is 1806. John Wilkes is thirty years old. His brother Peter is twenty-six. They live in a small town which we will call Wolton, five miles (eight kilometers) from the city of Manchester. Each of them is married and has two small children. Each family lives in a cottage with a small garden.

John and Peter Wilkes work together at weaving cotton, using a shed next to John's cottage for their workshop. They get the raw cotton from a merchant, spin it on a mule, and weave it on their handlooms. They return the finished cloth to the merchant, who pays them by the piece for their work. Their wives help with the spinning, but the children are too small to help.

Six years before, in 1800, each Wilkes family was earning an average of 25 shillings a week. Factories are now beginning to produce cheaper, machine-made cotton cloth. To compete with the factory-made cloth, the cotton merchants are no longer paying the handloom weavers as much for the cloth they produce. By now, in 1806, their wages have fallen to 22 shillings a week.

One of the new steam-driven cotton mills is being built in Wolton. It will have all the latest spinning machines and power looms. Both John and Peter have received offers to work as overseers in the new factory. If they accept, their job will be to make sure that the other workers are doing what they should, and that the machinery is running properly at all times. Their work would include checking the machinery, keeping it in good order, and repairing any broken parts. They would not do any weaving, of course, as that would all be done by the machines. Their wages would be 22 shillings a week each.

► See Research Bank No. 10, page 112, for an early account of the invention of the power loom.



The two brothers have different views on the job offer. As you follow the discussion between them, decide for yourself which one you agree with, and give reasons to support your decision.

JOHN: This mill thing is crazy. Look, when you work in a mill, you have to keep working as long as the steam engine is operating. If you work in my shed, you can take a break any time you want. If you get tired, you can walk around the garden. You can even take a day off if you want, as we did last month.

PETER: Yes, but we still have a lot of work to do here. We can take breaks, but we still have to work most of the day.

JOHN: How many hours a day would you have to work in the mill?

PETER: They said twelve to fourteen normally, but up to sixteen hours if the owner wants it. But in our shed, we've sometimes worked fifteen hours a day when we had a big job to do.

JOHN: Yes, but then *we* made the decision, not the owner of the mill.

PETER: It doesn't make much difference who makes the decision. Work is work. Also, the work is lighter in the mill, because the machine does the work.

JOHN: The machine makes the work monotonous. When you weave, you have to think all the time. Also, no self-respecting weaver in this town is going to work in that mill. Do you know why? Because it's the very *dregs* that work in the factories. It's those cottagers who got pushed off their land, people who don't have any skills, people who've failed at their other jobs. Do you really want to work with those people?

PETER: I don't mind, as long as the pay is good.

JOHN: You're earning the same amount here, and you're your own boss.

PETER: What good is it if you're your own boss, if your earnings are going down, as they have in the last six years? I bet the mills will drive our earnings down further.

JOHN: I don't think so, and anyway we're still doing awfully well. Look at all the things I bought in the last couple of years: a watch, that clock in the mahogany case, the tea service and the plated silverware . . .

Another thing I don't like about the mill is all those rules. There's a mill in Manchester where they lock the doors during working hours, so the workers cannot leave at all. Here's a list of the rules they have there, and the fines they charge for breaking them:

Any spinner found with his window open	1s
(factories had to be kept very hot)	
Any spinner with dirty hands and clothes at work	1s
Any spinner found washing himself	1s
Any spinner leaving his oil can out of its place	1s
Any spinner heard whistling	1s
Any spinner spinning with his gaslight on too long	
in the morning	2s
Any spinner putting his gaslight out too soon at night.....	1s
Any spinner being 5 minutes late after the last bell rings.....	1s
Any spinner being sick who cannot find another spinner to	
take his place must pay for steam per day	6s

Which of these fines seem fair under these conditions?

From this list, what can you tell about factory working conditions in the early 1800's?

PETER: Well, the temperature here in the Wolton mill has to be high, too. You know that the spinning of cotton can only be done in a hot room. Those fines are needed because the people in the mill aren't used to working in an orderly way, and in a large group. There are a lot of people in the mill, and they have to be organized. If one person makes a mistake, the whole factory will stop. There's a reason for the rule about sickness, too. Anyone can claim he's sick when he just doesn't feel like working. That rule makes sure sickness is genuine.

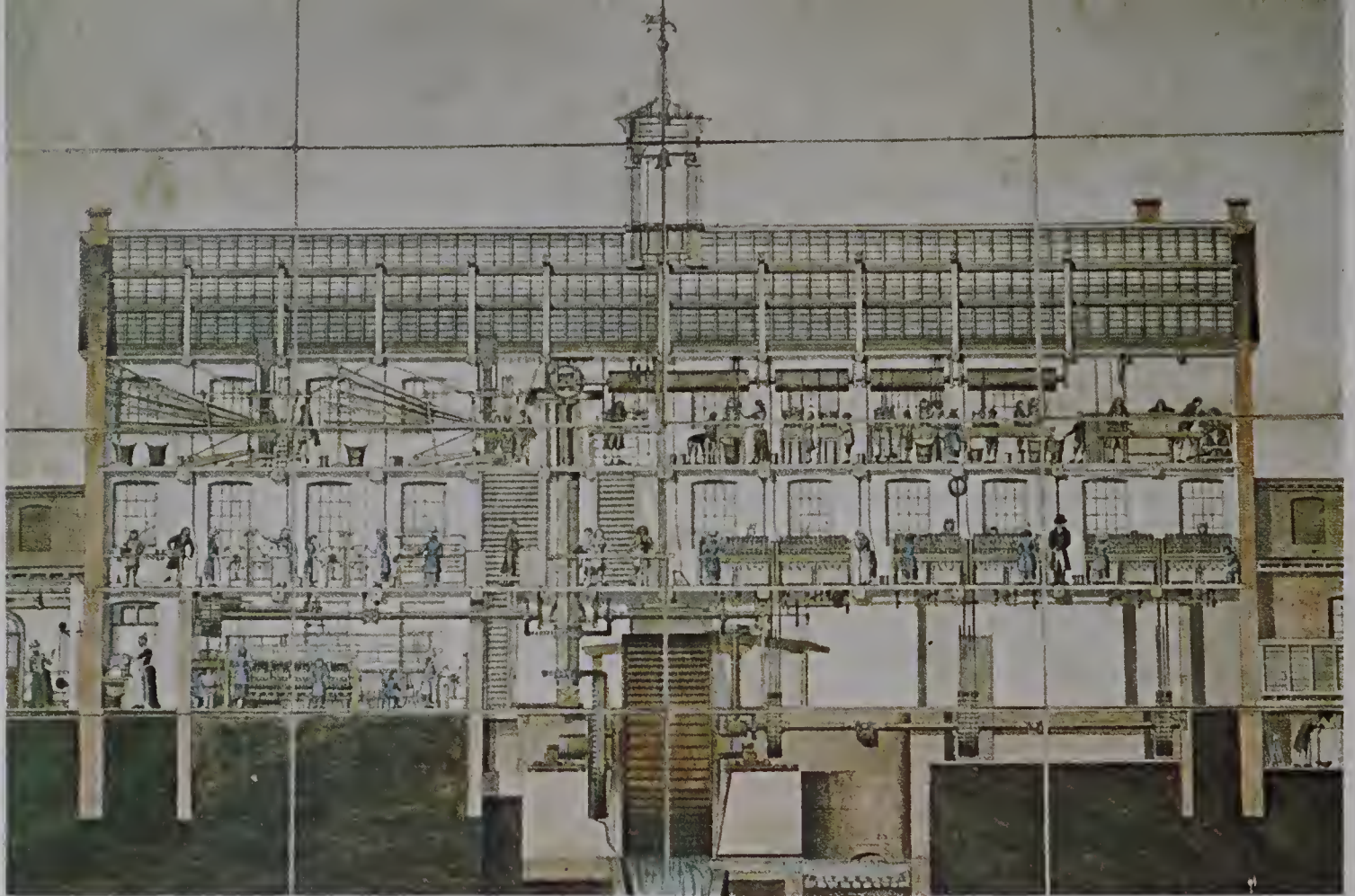
JOHN: But if you are really sick, then it isn't fair at all. When you work in a factory full of machines, they seem to treat you like a machine, too.

Neither brother was able to persuade the other, and they went their separate ways. John continued to spin and weave cotton in his own workshop, while Peter went to work in the factory.

Thinking It Through

1. What arguments does each brother give for his decision?
2. Based on their arguments, what do you think each of them valued? With whom do you agree?
3. This discussion took place in 1806. Can you predict which brother would be better off in twenty years? On what do you base your prediction?

 Early responses to the factory system appear in Research Bank Nos. 11–12, pages 113–15.



Spinning and weaving factory run by water power.

What Happened to John and Peter Wilkes?

The year is now 1827. Peter Wilkes has been working at the factory for twenty-one years. His wages have stayed at 22 shillings a week, but the cost of living has dropped during that time. His wife did not have to earn extra money; she took care of the house and the garden and the children. His son was able to go to school until the age of fourteen, and is now working as a shopkeeper's clerk. His daughter worked as a salesgirl in a shop until she got married.

Peter was right about John's earnings, for they continued to fall after 1806. The only way that a weaver such as John Wilkes could stay in business was to take less and less money for his work. By 1827, John's earnings had dropped to only 6 shillings a week.

John and his wife could no longer support themselves on their earnings, and they had to depend on Peter for help. John's two sons saw no future in their father's occupation. They left England for America, which was starting its own cotton industry by then. They settled in Connecticut, where factory owners were paying good wages for experienced cotton workers. John was broken-hearted that the factory had destroyed his way of life.

By going to work in the factory, what did Peter gain? What did he lose?

By remaining a weaver, what did John gain? What did he lose?

In this case, what did it take to succeed in the industrial system?

The Fate of the Weavers

What happened to John Wilkes happened to many thousands of weavers throughout Lancashire. Their livelihood and their way of life were destroyed. Weavers could no longer support their families. Skills they were proud of became useless. Sons no longer followed in their fathers' footsteps. The following statistics tell the same story in a different way:

What relationships can you find among the three tables below?

How does the story of John Wilkes fit in with these statistics?

Year	Average Weekly Earnings of Cotton Handloom Weavers shillings/pence
1795	33s/3d
1800	25s/ —
1806	22s/ —
1810	19s/6d
1820	9s/ —
1827	6s/ —
1833	5s/6d

Year	Number of Cotton Handloom Weavers in Great Britain
1801	164,000
1810	200,000
1820	240,000
1830	240,000
1833	213,000
1840	123,000
1845	45,000

Year	Number of Cotton Power Looms in Great Britain
1813	2,400
1820	14,150
1829	55,000
1833	100,000

An Investigation

1. Talk to someone who works in a factory—or to several people, if possible. Ask them to describe their work day. What do they like best about their jobs? What do they like least?
2. Talk to one or more persons with a small business of their own—such as a small family bakery or pizzeria, an auto body shop, a TV repair shop, or a shoe repair shop. Ask them to describe their work day. What do they like best about their jobs? What do they like least?
3. If you had to choose today, would you rather take a job in a factory or try to start a small business of your own? List the reasons for your own choice.

► For descriptions of the handloom weavers and reactions to their changing conditions, see Research Bank Nos. 13–15, pages 115–17.

THE REVOLUTION IN IRON

While the cotton industry led the way, it was not the only industry in England that was changing. During the same period, from 1770 to 1850, dramatic changes were also made in the manufacturing of iron. For England and other nations developing toward industrialization, iron was one of the most important resources.

Let's look at what was happening in the iron industry. As you examine this new set of evidence, try to compare it with the two lists which you have been making on industrialization. Do those lists, based on evidence from the cotton industry, apply equally well to the iron industry? As you go along, you may want to make further additions or changes in your lists:

1. What did it take for England to become industrialized?
2. What did it take for an individual to "make it" in an industrial system?



1. Bellows raising temperature of fire.



2. Pouring hot, liquid iron into molds.



3. Hammering hot iron into finished form.

The Need for New Methods

In the 1700's, the iron industry in England was small and backward. Iron was produced by smelting (fusing in a hot furnace) iron ore with charcoal, which was made from wood. The iron produced in this way was expensive and of poor quality. The total value of iron production in 1760 was only £1.2 million, as compared with £10 million in the wool industry.

The English iron industry was unable to meet the country's growing need for iron. Forests were fast disappearing, and it became more difficult to get charcoal for smelting. In any case, Swedish iron was better and cheaper. By 1760, England was importing more than twice as much iron as it produced at home. Most of this iron came from Sweden and Russia.

In 1709, a man named Abraham Darby found a way of making iron without using wood. Darby owned a foundry—an ironworks—in Shropshire, which is part of England's coal and iron district known as the Black Country. He made iron by smelting iron ore with coke, the remains of heated or burnt coal. The coke made a hotter and quicker flame and was cheaper than charcoal. While wood was becoming scarce, England had a vast supply of coal.

But it was difficult to maintain a constant heat for this smelting process. Huge bellows were needed to fan the heat, and it was difficult to get enough power to pump the bellows. This problem was finally solved in 1775 by the Watt steam engine. An ironworks owner named John Wilkinson was the first to use a

steam engine for this purpose, and other manufacturers soon followed his example. (See map, page 51.)

The raw iron, or pig iron, produced by smelting was still of poor quality and full of impurities. Blacksmiths and ironworkers had to hammer the pig iron by hand to remove the impurities, which took a lot of time and hard work. Even so, the quality of the finished product was not very good.

The Big Breakthrough

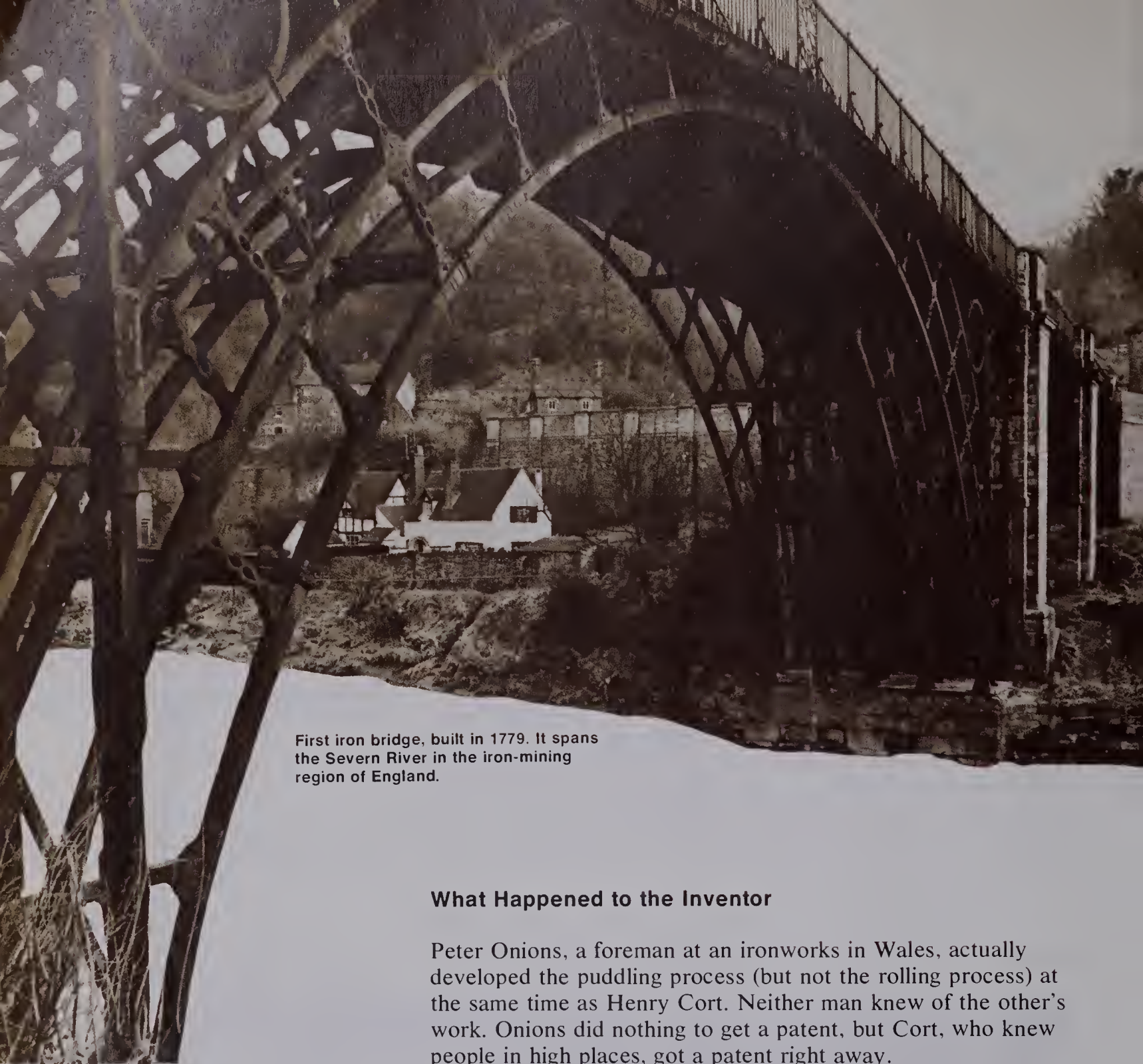
In 1784, a man named Henry Cort discovered a way to solve most of these problems. Cort was born in 1740. In 1765, he became a contracting agent in London for the English navy. In 1775, he went to Hampshire, in southern England, to carry out experiments in improving the quality of iron. Better iron, he believed, would make better and more accurate guns for the English navy.

Cort developed a new process known as puddling and rolling. In this process pig iron was heated until it was pasty and then it was stirred with iron rods until the impurities disappeared. Then it was passed between iron rollers. Hammering was no longer necessary. The result was a high quality iron that could be produced cheaply and quickly. Using Cort's process, a foundry could produce fifteen times more iron than it had produced using the old process.

See Research Bank No. 16, pages 117–18, for a modern historian's view of the effects of some of these new inventions and processes.

Pushing hot, liquid iron toward molds in a smelting-house, 1788.





First iron bridge, built in 1779. It spans the Severn River in the iron-mining region of England.

What Happened to the Inventor

Peter Onions, a foreman at an ironworks in Wales, actually developed the puddling process (but not the rolling process) at the same time as Henry Cort. Neither man knew of the other's work. Onions did nothing to get a patent, but Cort, who knew people in high places, got a patent right away.

Cort entered into a partnership with Samuel Jellicoe to set up a new ironworks. Jellicoe put up the money for the ironworks, in exchange for Cort's patent rights. As it turned out, Jellicoe got most of the money from his father who, as Deputy Paymaster of sailors' wages, had embezzled it from the English navy. This scandal blew open in 1789. As a result, Cort's patent rights were turned over to the government, which made no effort to collect fees from users of the process.

How does Henry Cort's pension compare with the earnings of the other inventors? the earnings of a handloom weaver?

How does Cort's story fit in with your list #2 (page 35) on the ingredients of success in an industrial system?

After that, the puddling and rolling process spread rapidly, but Cort himself was ruined financially. After 1794, he received a government pension of £200 a year, which he lived on until his death in 1800.

Growth of the Iron Industry

Darby's coking process had solved the problem of the dwindling supply of wood. Watt's steam engine had solved the problem of pumping the bellows to keep the smelting furnaces hot. Finally, Cort's puddling and rolling process solved the problems of poor quality and high costs. Improvements continued to be made. When Darby began smelting iron ore with coke, he needed fifteen tons of coal for each ton of iron ore; by 1840, with improved methods, only three and one-half tons of coal were needed per ton of iron ore.

These technological developments, plus England's natural resources of coal and iron ore, permitted a rapid expansion of the iron industry. At the same time, the demand for iron was growing faster than ever. More and more high quality iron was needed by the military for guns; by shipbuilders for anchors and other hardware; by farmers for plows and tools; by cotton manufacturers for their machines. The iron industry grew by leaps and bounds. By 1840, England was producing more iron than the rest of the world combined.

IRON PRODUCTION IN ENGLAND 1757-1850

Year	Tons of Iron Produced
1757	18,000
1788	68,000
1796	125,000
1806	250,000
1825	580,000
1830	678,000
1835	1,000,000
1840	1,500,000
1847	2,000,000
1850	2,250,000

Ton: An English ton is about 1,000 kilograms.

The Impact of Iron

The growth of the iron industry, in turn, helped to bring about more growth and change in other parts of the economy. The need to ship iron and coal, for example, made it necessary to build better means of transportation. High quality iron, plus the steam engine, helped to provide the answer: the railroad. By 1829, the Liverpool and Manchester Railway connected Manchester, the largest cotton-manufacturing city in Lancashire, with the port of Liverpool. By 1850, England had 5,000 miles (8,000 kilometers) of railroads.

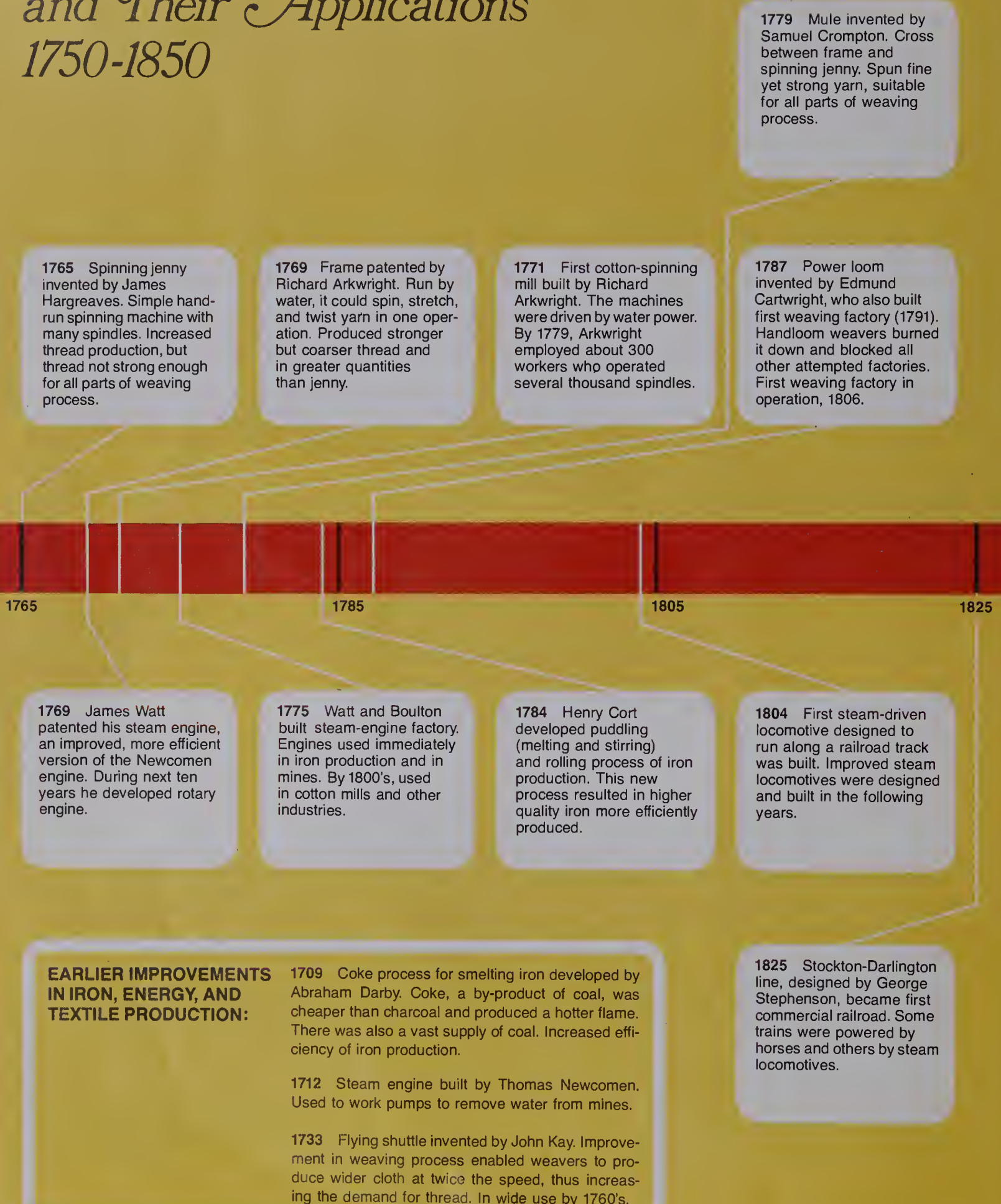
The rapid growth of the cotton industry had few direct effects on other parts of the English economy. The raw cotton was imported, and most of the finished cloth was exported. Aside from the cotton manufacturers themselves, the main businesses affected were shipping and foreign trade. The growth of the iron industry, on the other hand, affected every part of the economy — mining, farming, transportation, and industry of every kind. The development of the iron industry made possible the construction of large factories, heavy machinery, and railroads — thus providing the basis of all further industrialization.

The revolution in the cotton industry ruined the cottage weavers. What effect would the revolution in iron have on workers in the iron industry? Explain.

Try to list all the ways in which our modern industrial way of life depends upon iron (or steel).

► For accounts of the early railroads, see Research Bank Nos. 17-18, pages 118-19.

Timeline of Inventions and Their Applications 1750-1850



Expressing Your Views

We have been examining how England became an industrial nation. We have seen people who “made it” in this process and people who did not.

Look at your two lists, on personal success and on the ingredients of industrialization (page 37). Using the lists and all the evidence you have seen, record your own analysis of the changes that occurred in England.

- 1. What type of people became “successful” at the time of industrialization?*
- 2. How did these people contribute to industrialization?*
- 3. What other factors caused England to become industrialized?*
- 4. How did England change after it became industrialized?*
- 5. Was it worth it? (Be sure to consider the changes from as many points of view as possible.)*

1845

1830 Liverpool-Manchester railroad opened—first steam-powered railroad for commercial and passenger use. George Stephenson's locomotive “The Rocket” traveled up to 29 miles (48 kilometers) an hour.

3. Costs and Benefits

As the Industrial Revolution gained momentum, it seemed to take on a life of its own. The countryside changed; towns and cities grew; old jobs were destroyed; new jobs were created. Even as these changes were going on, some people began to question whether these changes were good or bad – and for whom.

Debate over the effects of industrialization began early in the 1800's. The argument is still going on today. In this section of the Unit, you will have a chance to see how some people answered the following questions. In the end, however, you will have to come to your own conclusions:

Effects of Industrialization

What are the benefits of industrialization?

What are the costs of industrialization?

Can anything be done to keep the benefits, while reducing the costs?



We will begin by tuning in on a debate that might actually have taken place—although the characters are imaginary, and the term “Industrial Revolution” was not yet widely in use. The year is 1851, and the place is the London Debating Society. Two debaters will be presenting arguments on the following statement: “The Industrial Revolution has benefited English society as a whole.” Mr. Oppem will argue in favor of this statement while Mr. Pessim will oppose it. As a member of the Debating Society, you will be asked to decide which one has presented the stronger case—for or *against* the Industrial Revolution.

View of London from Blackfriars Bridge spanning the Thames River, 1802.



THE DEBATE: THE OPENING STATEMENTS

MR. OPPEM: The Industrial Revolution has benefited society as a whole. Since 1750, the annual output of our economy has increased seven and a half times. Today, everyone is enjoying things that did not exist a hundred years ago. Railroads have cut travel time and shipping time to one tenth or one twentieth of what they used to be. Telegraphs can send messages across England in seconds. Our tools and our machinery are much improved. I could easily go on and on, with more evidence and statistics. The list of achievements is long and impressive.

It is true that some people—the handloom weavers, for example—have lost their jobs to machines. But that is the price of progress. Since ours is a growing economy, there will be new jobs for the former handloom weavers to take. This is a small enough price to pay for all the benefits that have been gained.

MR. PESSIM: There is no doubt that there have been many new inventions in the past hundred years, and that we have increased our total output. But who has actually benefited from all these changes? The rich and the middle classes have become a great deal richer. But the living standards of the vast majority—the working people of this country—have remained the same or have become worse.

What does each of these debaters seem to care about most? How can you tell?

With whom do you agree at this point? Why?

Do the stories of the Moores and the Wilkes brothers support one side or the other? If so, how?

Even if you could show that the workers' standard of living rose slightly, many have lost their way of life and their independence. They have been forced to become tied to a machine, and they are completely at the mercy of their employers. This is just as bad or even worse than a drop in living standards. I say that the Industrial Revolution has not benefited society *as a whole*.

Passengers traveling on the Liverpool and Manchester Railroad in a train of first-class carriages with luggage and mail on top, 1831.



HOW CAN ONE BE SURE?

Statistics (evidence acquired by counting) are among the major sources of information used by historians and social scientists. A census, or official counting, that is carefully done can provide information on whether the population is growing, and in what ways it is growing. It can reveal trends that can be measured and show what percentage of the people they affect. Scholars also put different sets of statistical information side by side and try to determine a pattern of relationships, called a correlation, among them.

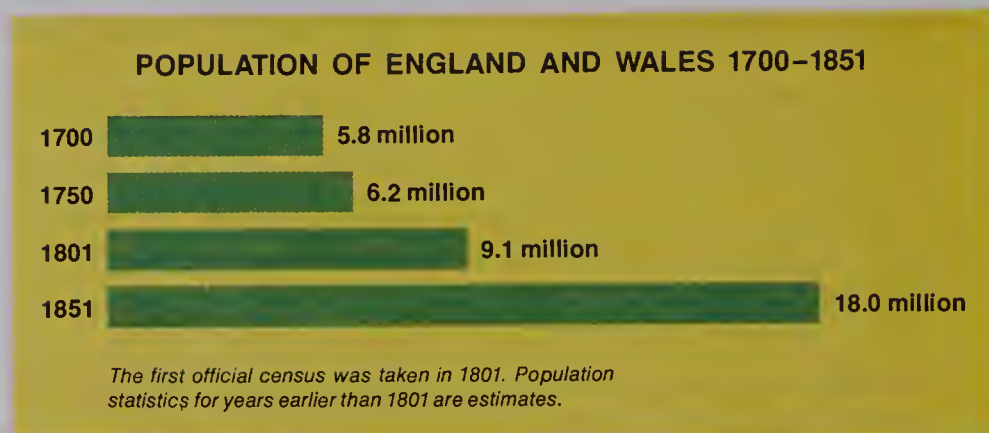
It is important in using statistics not to draw too many conclusions from them. If wages go up, for example, does that mean people are better off? Not if prices have risen more than wages. If the population is growing and the value of manufactured goods is growing, does that mean that one caused the other? Not necessarily.

Since the 1700's scholars have looked at some of the same evidence on the Industrial Revolution that you are looking at. They have not always agreed on what the statistics show about the Industrial Revolution. As you follow the debate on the statement "The Industrial Revolution has benefited English society as a whole," notice how each speaker uses the evidence to support his argument.



THE ARGUMENT OVER POPULATION

MR. OPPEM: Let us begin by looking at some simple statistics – the increase in population during the Industrial Revolution. Surely people must be thriving if their numbers have grown so rapidly.



Why has our population grown so much faster since the beginning of the Industrial Revolution, after 1750, than it grew before? The reason is that people are living longer; fewer of them die each year. There has been a dramatic fall in the death rate – the number of people who die each year out of every 1,000 persons. Obviously, if fewer people die, and the same number as before are being born, then the population will increase. That's exactly what happened.

Now why are fewer people dying? Not because of medical advances, for new vaccines and medicines have not really affected the country on a wide scale. The real reason lies in an improvement in living conditions, housing and hygiene, and a better and more regular diet. As to the benefits of the Industrial Revolution, surely these figures speak for themselves.



MR. PESSIM: Figures never speak for themselves, you know. Much depends on how you choose your figures, and how you interpret them.

Your own figures show that the big drop in the death rate had already occurred before 1810. This was before the effects of industrialization were widespread. Did the improvement occur mainly in the early 1800's, or did it occur much earlier—back in the 1700's? Another thing that your figures show is that the death rate was actually higher in the 1830's and 1840's than it was in the 1810's.

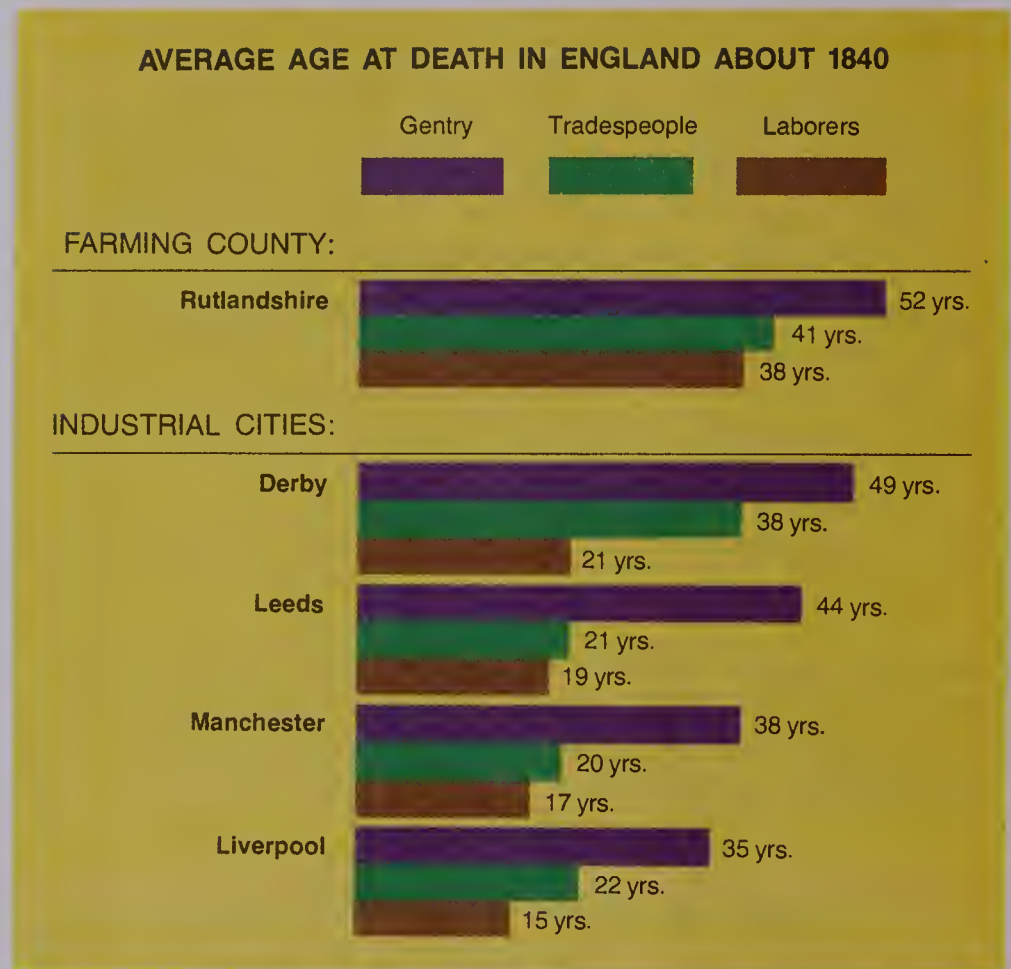
The figures do not prove that living conditions improved, or that people had a better diet. I suggest that the recent development of railroads and canals prevents the starvation of earlier times. If there were a bad harvest today in one part of England, food now could be easily and quickly shipped there from other parts of the country. English workers today may be *more poorly* fed than in earlier times, but they will survive longer if they are *regularly* fed.

Also, you assume that the death rate has dropped for everyone. But I think the truth is that some people have benefited at the expense of others. Look at the death rates for Manchester, one of the biggest industrial cities in England.



The death rate there in the 1840's is close to the national death rate way back in the 1730's. For people in industrial cities, indeed, the situation may have improved during the 1700's and now is actually getting worse. In fact, for the five largest cities after London—Birmingham, Bristol, Liverpool, Leeds, and Manchester—the death rate has increased from 21 per 1,000 in 1831 to 31 per 1,000 in 1841.

To prove my point, that only a few people have really benefited, here are some different figures. They show the average age of death of persons in different parts of the country, and in different social classes.



First, look at the difference between the figures for the countryside and the cities. These cities, which have grown so rapidly because of the Industrial Revolution, are death traps. Here are additional statistics from a government report of 1842. In Manchester, our largest cotton-manufacturing city, 50 percent of all children die before reaching the age of five, compared with 32 percent for all of England. If we analyze Manchester's 50 percent child-death rate by social classes, we find that 57 percent of working-class children die before reaching five, compared with 20 percent for the higher classes.

Second, look at the difference between the upper classes and the workers. How can you justify an average life expectancy of only fifteen years for the industrial workers of Liverpool? The rich may benefit from a longer life today, but clearly the poorer classes have suffered.

MR. OPPEM: Nobody is justifying a short life span for any group of people. The high rate of death among babies and

young children – which accounts for the short average life span—is, of course, unfortunate. But this situation is not new, especially among the poorer classes. Besides, cities have always had a higher death rate than the countryside, even before the Industrial Revolution. I admit that progress has been uneven. Still, an overall decline of the death rate from 36 per 1,000 in the 1730's to 21 per 1,000 in the 1810's is an impressive improvement. Look at the figures for London of children dying before the age of five:



The poor must have been affected by this drop in the death rate. While the present death rate for working-class children in Manchester (57 percent) is still bad, it is better than the death rate for children of all classes in London a century earlier. Doesn't this in itself mean that the Industrial Revolution has been good for England?

An Investigation

1. Find out the present death rate and life expectancy in the United States. The Census Bureau or a local insurance agency might supply the information. You will also find such statistics in an almanac or a statistical abstract. What differences do the statistics show for:
 - people in urban areas and people in rural areas?
 - people with low income and people with high income?
 - children living in urban areas and children living in rural areas?
2. Are there wide differences between these statistics and those in England in the 1800's? If so, how do you account for the differences?

THE ARGUMENT OVER LIVING CONDITIONS

MR. OPPEM: If statistics alone will not convince you, perhaps you will believe some eye-witness accounts. Many people have observed an improvement in health and sanitary conditions. One such person was Dr. Marshall, who gave evidence before a Parliamentary committee in 1819. Another was a leader of workers' associations, Francis Place, who was familiar with the living conditions of working-class people.

□ At one time, it was calculated that out of every 100,000 people who died in London, 66,000 died of fevers. This large percentage of fevers has now been replaced by other diseases. Those fevers which we still have are not of the same character, for we are strangers to the fevers' former harmful and deadly nature.

If any causes have led to our freedom from the plague and bad fevers, they are the greater cleanliness and less crowded state of the residents. These are the results of the wider streets, the building of better sewers and drains, and the generous amount of water now distributed throughout the city.

(Adapted from testimony of Dr. Marshall before a Parliamentary committee, 1819.)

■ No longer are there groups of half-starved, miserable, scabby-headed children with rickety limbs and bowlegs, as there were in the days of my youth. Neither is there anything like the same death rate among them.

On a tour through the poorest parts of London, I carefully observed the children. I can safely say that they are equal in every way, and in some ways superior, to the children of tradespeople in much wealthier districts during my childhood.

For instance, when I was a child, the children of tradespeople, with good houses in the business district, had lice in their hair. The children I examined today do not seem to be at all troubled with these insects. In the narrow alleys there were some very poor children, but even these were clean compared with children of former times. Few were as wretchedly clothed or as filthy as many used to be.

In the past, the families of artisans, merchants and shopkeepers wore clothes made of

leather, linen, and wool. These were never washed, although they were worn day in and day out for years. With the improvement in the manufacture of cotton goods a great change took place. People found that cotton goods were less expensive. As it was necessary to wash them, cleanliness followed almost as a matter of course.

Cleanliness in dress naturally brought with it cleanliness in other matters. With the desire to own more conveniences and better utensils, the houses of tradespeople and the rooms of working people were kept in better order. They are now better furnished and in all respects neater than before.

(Adapted from remarks by Francis Place, 1824, in *London Life in the 18th Century* by M. Dorothy George.)

Sewers being installed in Picadilly, London.



MR. PESSIM: These opinions are very interesting. But some experts, such as Friedrich Engels, a German political philosopher, and Dr. Willan disagree. Engels came to England to manage a cotton factory owned by his father in Manchester. These eyewitnesses present quite another view of the slums of London.

■ The houses are occupied from cellar to attic, filthy inside and outside. Their appearance is such that no human being could possibly wish to live in them. But all this is nothing compared with the dwellings in the narrow courts and alleys between the streets. These dwellings are entered by covered passages between the houses, in which the filth and tottering ruin cannot even be described.

Scarcely a whole windowpane can be found. The walls are crumbling, the doorposts and window frames are loose and broken. Doors are old boards nailed together, or are altogether missing in this thieves' quarter, where no

doors are needed, since there is nothing to steal. Heaps of garbage and ashes lie everywhere, and the foul liquids emptied before the doors gather in stinking pools.

Here the worst-paid workers live huddled together with thieves and the victims of street life. Daily they sink deeper, losing more and more power to resist the evil results of want, filth, and evil surroundings.

(Adapted from *The Condition of the Working Classes in England* by Friedrich Engels, 1845.)

□ Persons of the lowest class do not put clean sheets on their beds three times a year. Even when no sheets are used, they never wash or clean their blankets, nor replace them until they are no longer usable.

Curtains are never cleaned, but remain in the same state until they fall to pieces.

From three to eight people of different ages often sleep in the same bed. In general there is only one room and one bed for each family. The room they occupy may be a deep cellar, where almost no light can enter, and which admits no change of air. Or else they live in an attic with a low roof and small windows. This attic is located at the end of a dark passage filled not only with bad air, but also with the vapors from rotting excrement at the bottom of the staircase.

(Adapted from *Reports on the Diseases in London* by Dr. R. Willan, 1801.)

MR. OPPEM: I admit that the life of the working class in some parts of our cities is pretty bad. But city slums with their unsanitary conditions are hardly an invention of the Industrial Revolution. Unfortunately, they have been with us for a long time. You yourself have quoted a description from 1801. Could those conditions have been caused by machines and industry?

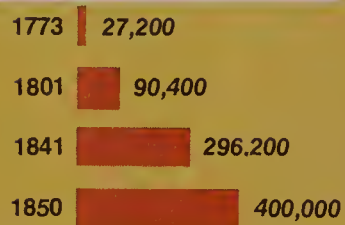
Crowded slums on the east side of London.



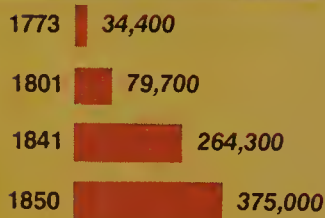
MR. PESSIM: I'll grant you that there were slums, especially in London, before the Industrial Revolution. But there are many more people living in such conditions today than there ever were in the past. London itself has grown tremendously in the past hundred years. The new industrial cities have grown even more rapidly.

GROWTH OF POPULATION OF MAJOR ENGLISH CITIES 1770's-1850

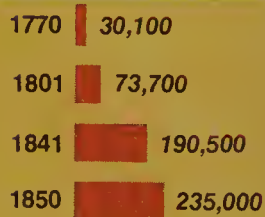
MANCHESTER



LIVERPOOL



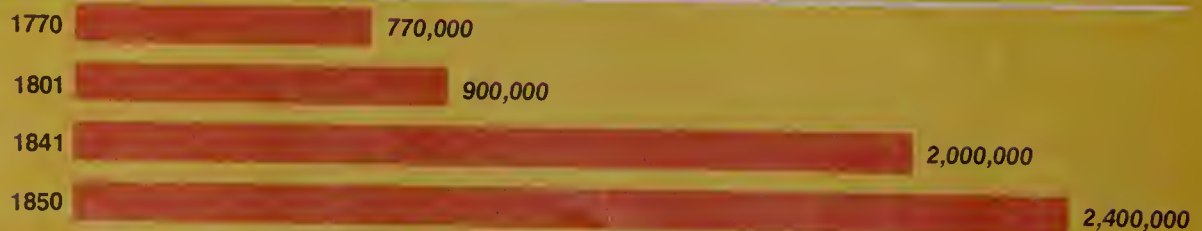
BIRMINGHAM



LEEDS



LONDON



In the past seventy-five years, for example, Manchester has grown from a market town of less than 30,000 people into an industrial city of 400,000. Most of these people are factory workers and their families. The result has been tremendous overcrowding and the worst possible slums.

I don't know if these new, industrial slums are worse than the old slums of London. But many people who now live in slums did not live there before. They came from small towns or from the country. They have always been poor; perhaps they have even been hungry. But in the past, at least they had fresh air to breathe and a piece of ground for a garden. Even if they now have a little more money for food and clothing, I say that they are worse off than before.

Analyzing the Evidence

So far in the debate, the speakers have been using different kinds of evidence to support their arguments.

- 1. Which speaker makes the more careful use of the statistical evidence?*
- 2. How effective is the visual and written evidence? Why?*
- 3. Which evidence offered so far do you find most convincing? Why? Which is the least convincing?*
- 4. Are there other kinds of evidence you would like to have?*

An Investigation

Describe the trends of population growth of the largest city near you. Go back as far as you can find statistics and written evidence. If possible, try to get pictures of that city during its years of growth.

- 1. Did the population rise faster than the population of Manchester or London?*
- 2. What can you tell about living conditions, compared with those in England during the 1800's?*
- 3. Did conditions seem to improve over the years? If so, for whom?*

◆ See Research Bank Nos. 19–20, pages 120–22, for impressions of the changing cities.

THE ARGUMENT OVER WAGES AND PRICES

MR. OPPEM: You claim that the workers' slums are terrible. But if people were so much better off before, why didn't they stay where they were, instead of coming to the factories and terrible slums? Actually, workers get paid decent wages—that's why people are willing to work in the factories. Let's look at some figures on the wages that factory workers have earned over the past sixty years, and the prices they have had to pay for food and other things.

USING INDEXES

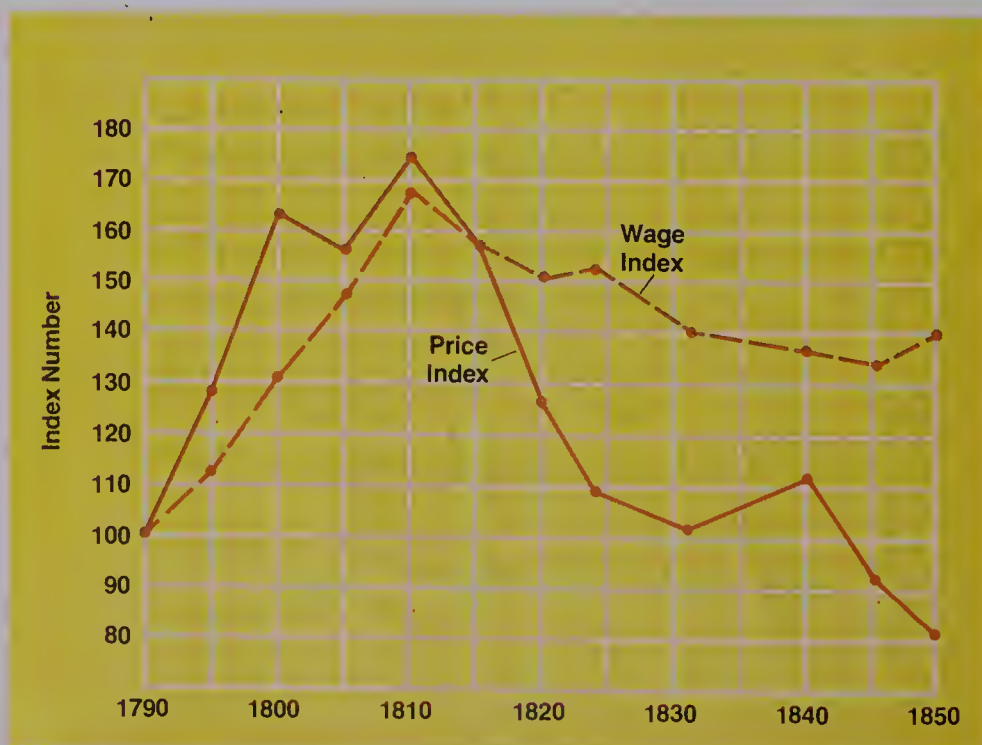
A wage index is a simple way of showing how wages have changed over time—whether they have gone up or down. This is how it works:

In making an index, the number 100 is assigned to a "base year"—in this case, 1790. Here, the number 100 represents the average wage paid to English factory workers in 1790. The index number 114 (for 1795) then means that wages, on the average, were 14 percent higher than they were in 1790. An index number of 200 would mean that wages had doubled. An index number of less than 100 would mean that wages had dropped below the level of 1790.

Using index numbers makes it easy to compare different things, such as wages and prices. As long as the base year is the same, you can tell at a glance whether or not wages have kept up with prices. If the same index numbers are used to make a graph, it is even easier to make a comparison.

WAGE AND PRICE INDEX 1790-1850

	<i>Index of Wages (Factory Workers)</i>	<i>Index of Prices</i>
1790	100	100
1795	114	128
1800	132	164
1805	147	157
1810	169	176
1815	158	158
1820	153	128
1824	155	110
1831	141	103
1840	139	114
1845	136	93
1850	141	84



These figures show that wages went up rapidly from 1790 to 1810. True, prices went up even faster during those years, so the workers were worse off. But that can be attributed to the

fact that England was at war with France. Wars always seem to drive up prices. Also, during that period, some harvests were bad. When there is less food, obviously the price of food goes up. So we can say that the decline in the workers' living standard during this period was caused by the war and bad harvests, not by the Industrial Revolution.

Since then, the workers' living standard has improved. The Industrial Revolution has helped to make products cheaper. Today the average factory worker is earning 41 percent *more* than in 1790 and paying 16 percent *less* for goods bought.

MR. PESSIM: It's not fair to say that the Industrial Revolution caused the rise in the workers' standard of living after 1815, but that it was not the cause of the bad times from 1790 to 1815. Either the Industrial Revolution *was* or *was not* responsible for the changes in wages and prices. You can't just sweep away those twenty-five years from 1790 to 1815. How many workers, or their children, never lived to see better days? And twenty-five years is a long time to wait for your standard of living to get back to its original level.

Besides, your figures are only for factory workers. As of now, they are still only 21 percent of the working population (1.5 million out of 7 million). I'm sure the earnings of farm workers (25 percent of all workers) are much lower. What about people thrown out of work completely, such as the handloom weavers?

Finally, the factory workers themselves are often out of work. In this new industrial economy, business often has its ups and downs. When a factory cuts back on production, or closes down for lack of business, the workers are laid off. We have had some periods when half of the factory workers were unemployed. Your figures show only the wages of workers *who have jobs*. Unemployed workers get no wages, and they have nothing else to fall back on. All in all, I doubt if the workers are really better off.

MR. OPPEM: You haven't shown that the wages of farm workers have declined. Actually, neither of us can say anything about them because we don't have the figures. But I would assume that if wages go up for one group of workers, they will also rise for other groups, because employers will have to pay more to keep their workers from going to higher-paying jobs.

Furthermore, it is unfair of you to dismiss my argument just because, as you say, factory workers form only 21 percent of the labor force. The groups you mention, such as farm workers and handloom weavers, were only indirectly affected by industrialization. The factory workers were directly affected; they were part of the Industrial Revolution. And their conditions have certainly improved over this period.



A bread riot, about 1830.

THE ARGUMENT OVER CHILD LABOR

MR. PESSIM: Wages and prices alone don't tell the whole story. If we want to see what the Industrial Revolution has really done to people, let's look at the working conditions inside the factories. These conditions would be bad enough for a grown man. But the majority of factory workers are in fact women and young children. A Parliamentary investigation in 1832 has produced ample testimony on the evils of child labor. Is this your idea of progress?

□ When did you first begin to work in mills or factories?—When I was about ten years of age.

What were your usual hours of working?—We began at five o'clock in the morning, and got out at nine.

And you got out at nine o'clock?—At nine at night.

What intermissions did you have for meals?—When we began at five in the morning, we went on until noon, and then we had forty minutes for dinner.

Had you no time for breakfast?—No, we got it best as we could, while we were working.

Had you any time for an afternoon refreshment?—No, when we began

at noon, we went on till night; there was only one break, the forty minutes for dinner.

Did you ever work even later than the time you have mentioned?—I cannot say that I worked later there. I had a sister who worked upstairs, and she worked till eleven at night.

At what time in the morning did she begin to work?—At the same time as I did.

To keep you at your work for such a length of time, what means were taken to keep you awake and attentive?—They whipped us at times.

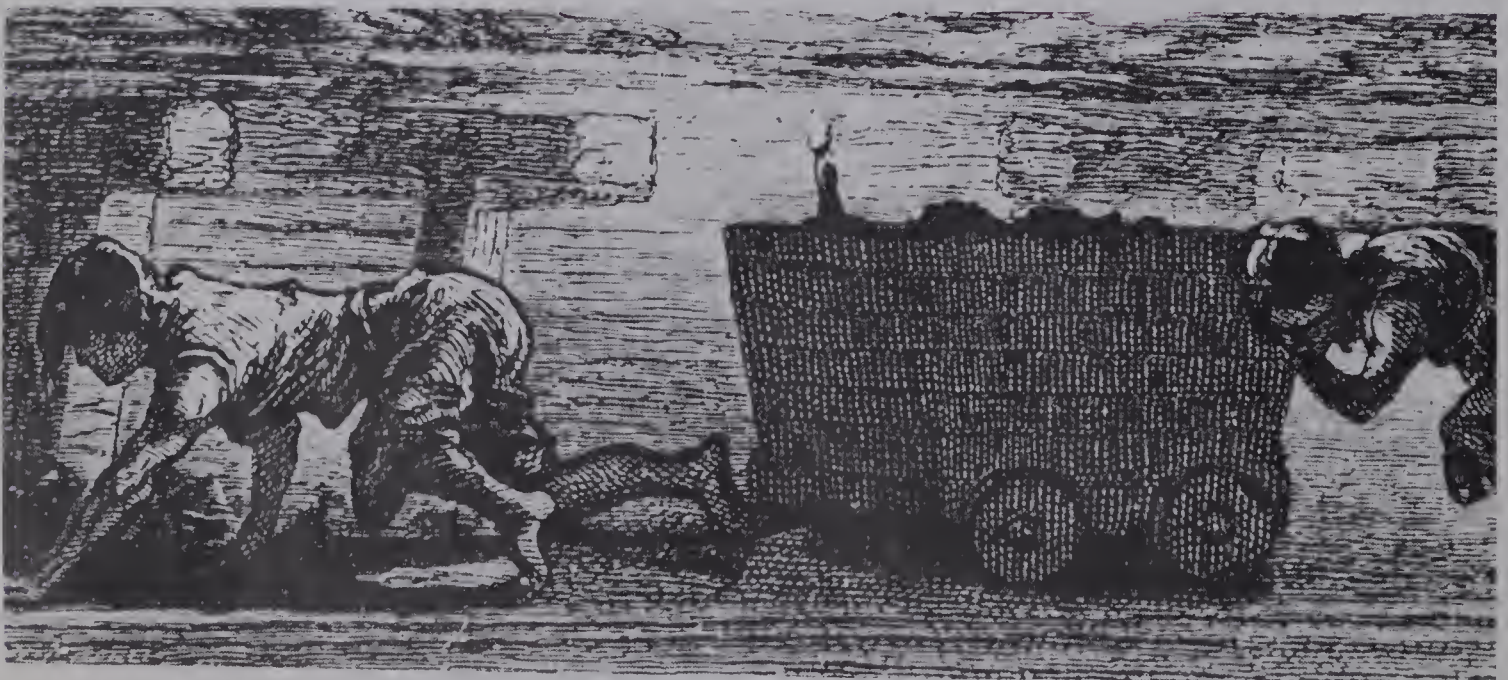
Were any of the female children whipped?—Yes, they were whipped in the same way as the younger boys.

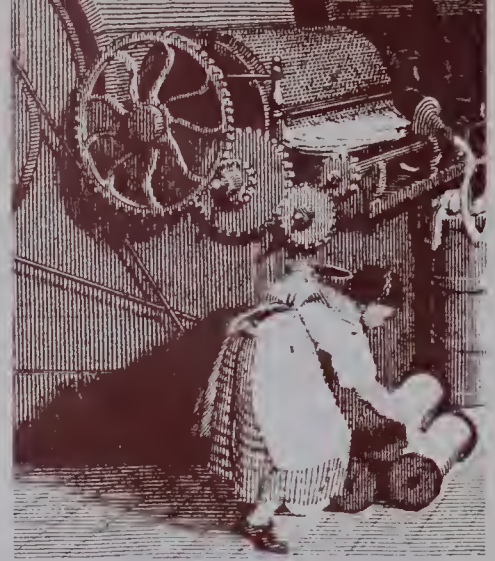
(Adapted from the testimony of William Cooper, Sadler Commission, 1832.)

□ The youngest age at which children are employed is never under five. But some children between the ages of five and six are employed in the woolen mills. I have frequently seen them going to work between five and six o'clock in the morning. I know that it is the general practice for them to go just as early to all the mills. I have seen them at work in the summer season between nine and ten in the evening.

(Adapted from the testimony of a witness before the Sadler Commission, 1832.)

Girls hauling and pushing a loaded cart in an underground tunnel of a coal mine.





Child working in a spinning factory.

MR. OPPEM: You are ignoring what conditions were like before the Industrial Revolution. Child labor is nothing new, any more than poverty or slums are. Before there were factories, children worked long hours at home, helping their parents. Many children, also, were apprenticed to strangers at an early age. Robert Owen, who later became a leading industrialist, was apprenticed to a shopkeeper at the age of ten. And there are many other examples of cruelty to apprentices, such as one example which took place in London. Are these experiences any better than the ones you have described?

☐ He employed seventeen apprentice girls, and had so cruelly ill-treated and starved them that five had died. The girls worked at embroidery on muslin from four or five in the morning till eleven or twelve at night. Their food was usually bread and water. It was brought to them to eat at their embroidery frames. The seventeen slept in a small attic in three beds. The girls had been heard shrieking and they had been seen seeking in the hog trough for food.

(Adapted from *London Life in the 18th Century* by M. Dorothy George, published by G. P. Putnam's Sons. Reprinted by permission of the publisher.)

☐ The assistants were up, had breakfasted, and were dressed to receive customers in the shop at eight o'clock. Sales usually continued until 10 P.M. Dinner and tea were taken hastily. Two or three, sometimes only one, escaped at a time to take what he or she could easily swallow, and returned to take the places of the others who were selling.

It was often two o'clock in the morning before the goods in the shop had been put in order and

replaced to be ready for the next day. Frequently at two o'clock in the morning, after working on foot all day from eight o'clock in the morning, I have been barely able, with the aid of the bannisters, to go upstairs to bed.

(Adapted from *The Life of Robert Owen*, Vol. 1, by Robert Owen, 1857.)

MR. PESSIM: In the past, there may have been individual cases in which children were overworked or badly treated. But in the factories, the exploitation of child labor—often with great cruelty—is an everyday thing. Listen to some other witnesses, including Robert Owen's son.

☒ In all the cotton factories they breathed an atmosphere more or less harmful to the lungs, because of the dust and the tiny cotton fibers that filled the air. In some cases mills were run fifteen, and in unusual cases, sixteen hours a day. They did not hesitate to employ children of both sexes from the age of eight. We actually found a great number under that age.

Most of the overseers openly carried stout leather whips, and we often saw even the youngest children severely beaten. In some large factories, from one fourth to one fifth of the children were either cripples or otherwise deformed, or permanently injured by overwork, and sometimes by brutal treatment. The younger children seldom held out more than three or four years without serious injury, often ending in death.

(Adapted from *Threading My Way* by Robert Dale Owen, 1874.)

☒ The children of the cotton mills are almost all ill-looking, small, sickly, barefoot, and poorly clothed. Many appeared to be no older than seven. The men, generally sixteen to twenty-four years of age, and none of them old, were almost as pale and thin as the children. I saw, or thought I saw, a broken-down race—human beings, stunted, enfeebled, and ruined and children that were never to be healthy adults.

(Adapted from *The Effects of Arts, Trade and Professions in Health and Longevity* by Dr. Turner Thackrah, 1832.)



Chimney sweep and apprentice.

MR. OPPEM: But these conditions also existed before industrialization. Here is an example of cruelty to a large number of children, namely, children who were abandoned or orphaned. The parish, the local government, was responsible for them. The younger children were cared for by nurses who often mistreated them, while the parish apprenticed the older children.

□ Among those parishes that have apprenticed children who are as young as seven years of age, there are several that apprentice children to chimney sweepers. Chimney sweepers ought to use their own children in the business. Then they would perhaps wash, clothe, and feed them. As it is, they do not. Those poor soot-covered youngsters

have no protectors and are treated worse than a humane person would treat a dog. They often beg in the streets, and seem to be in much more real need than common beggars.

(Adapted from letters to the Guardians of the Infant Poor, in *London Chronicle*, London, July 28–30, 1767.)

However bad conditions may have been in the past, laws have now been passed in recent years that will change all that. Today, women and children are protected by law from working long hours—even if they want to. In fact, some women have disguised themselves as men to keep on working in the mines and earn the money needed for their families. Also, some children have lied about their ages in order to work longer and earn more money.

Look at these acts passed by Parliament during the 1830's and 1840's. They protect women and children better than ever before.

THE FACTORY ACT OF 1833:

- forbade the employment of children under 9 years of age in textile factories.
- limited children aged 9–13 to working 9 hours a day and 48 hours a week.
- limited children aged 13–18 to working 12 hours a day and 69 hours a week.

THE MINES ACT OF 1842:

- banned boys under 10 years of age and all females from working underground.

THE TEN HOURS ACT OF 1847:

- limited work for children under 18 and all females to 10 hours a day.

► Additional information on child labor, including the apprenticeship system, appears in Research Bank Nos. 21–22, pages 122–25.

Thinking It Through

The issue of widespread employment of women and children has been debated ever since the Industrial Revolution began. Some of the questions which were asked are:

- What was the advantage to working-class families?*
- What were the benefits to manufacturers?*
- What were the costs? for the workers? for family life? for the manufacturers?*

*Prepare to debate this resolution: **The Industrial Revolution was not worth it because it was responsible for the abuses of child labor.***

From the evidence you have read in the course of the debate, create the arguments for and against the resolution. You may want to compare this evidence to today's laws concerning working conditions, minimum wages, and child labor. This information is available at your school or at local or state employment offices.

As you prepare your arguments, consider which points are most important to you. Who do you think might agree with you, Mr. Oppem or Mr. Pessim?

A Modern Parallel

- 1. Today there are laws which forbid young people to work at certain jobs. Why do you think such laws exist?*
- 2. Do you think it is the government's responsibility to restrict young people's employment? Why or why not?*
- 3. Do you think someone under seventeen should be allowed to work in a factory? on road construction? in a store? at a summer camp? Explain your answer.*
- 4. List the jobs you have held. These could be summer jobs, after-school work, baby-sitting, or weekend jobs. How do you think these jobs were helpful to you? What, if any, were the disadvantages?*

**Needy child in a working-class slum,
from an 1865 photograph.**



THE CONCLUDING STATEMENTS OF THE DEBATE

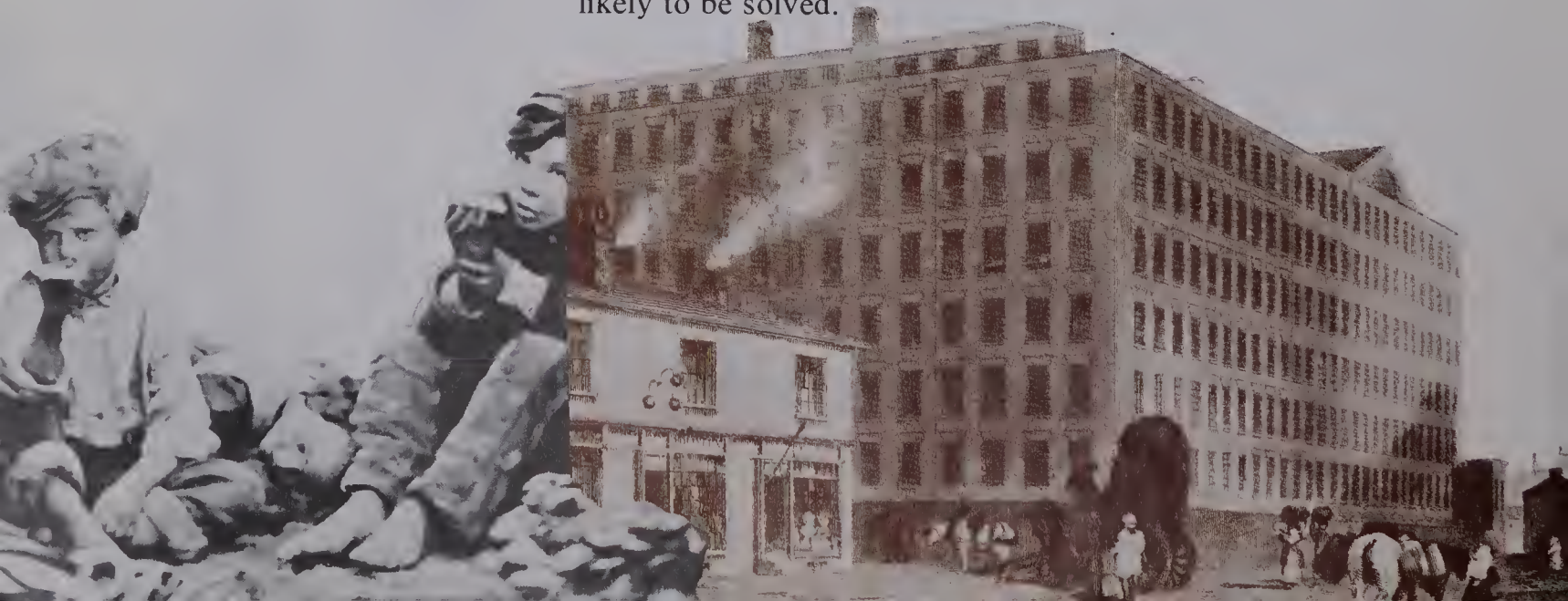
MR. PESSIM: While the new laws of the 1830's and 1840's are a great step forward, they do not change the facts of the past fifty or sixty years. They also do not solve the basic problems created by the Industrial Revolution. In conclusion, I hold that the Industrial Revolution was not worth it for three reasons:

1. The working people—the majority of people who work with their hands—have not benefited from the Industrial Revolution.
2. The Industrial Revolution has destroyed the way of life of many people, including the weavers. It has destroyed their independence, dignity, and self-respect. It has put them completely at the mercy of machines and of their employers.
3. Worst of all, the Industrial Revolution has destroyed our sense of values. Certainly life was hard for many before the Industrial Revolution, but people worked together in harmony. Now greed has caused us to destroy the handloom weavers, and to exploit children without concern for their welfare.

Profit has become our only goal. Our towns have profitable smoke, profitable dirt and disease, profitable slums and misery. This is the wrong direction for our society to take.

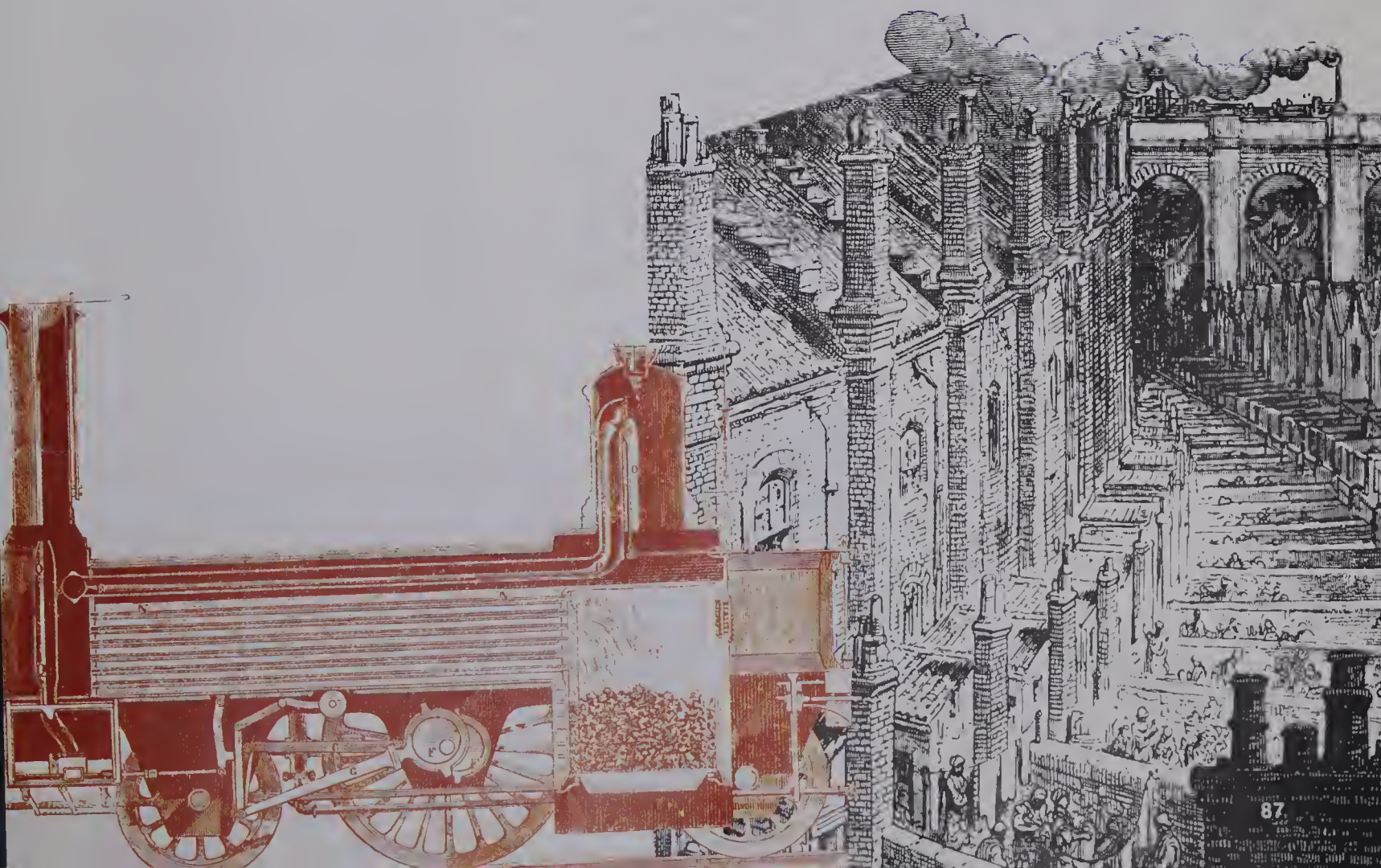
MR. OPPEM: History shows that people have always exploited one another. The Industrial Revolution has not made people any worse (or any better) than they were before. What the Industrial Revolution has done is produce more material goods, making life easier for everyone. For that reason alone, it has been worth it.

I would even go a step further. The Industrial Revolution has helped to make our society, if not more moral, at least more just. Look at the new child labor laws. By bringing people together in factories, the Industrial Revolution has made us see problems that simply went unnoticed before. Now that certain social problems have become more obvious, they are much more likely to be solved.



Expressing Your Views

1. *This is the end of the debate between Mr. Oppem and Mr. Pessim. For whom will you vote? Why? Which debater do you think used the evidence more effectively?*
2. *If you had been hired to help Mr. Oppem or Mr. Pessim in preparing their speeches, what other arguments might you have given them to include?*
3. *Looking back from today, draw up a balance sheet on the Industrial Revolution.*
 - *First, list all the things about the Industrial Revolution that you think were good—the benefits.*
 - *Next, list all the things about the Industrial Revolution which you think were bad—the costs.*
 - *On balance, would you say the benefits outweighed the costs?*
4. *Now look at the Industrial Revolution another way. Look back at the list of things you think you need to be happy (see page 3).*
 - *Did the Industrial Revolution produce things which you need for your happiness?*
 - *Did the Industrial Revolution cause changes which interfere with your happiness?*
 - *On balance, would you say that the Industrial Revolution was worth it? Or would it have been better to “stop the clock” before the Industrial Revolution?*



REACTIONS TO THE INDUSTRIAL REVOLUTION

Whether or not the Industrial Revolution as a whole was worth it, its negative side could not be ignored. People not only talked about it, but also tried to do something about it. Different people reacted in different ways, depending on what they thought the problem was.

Trying to Stop the Clock

The first people to be affected by the Industrial Revolution were the handloom weavers. As their earnings went down, their way of life became threatened. At various times and places in the late 1700's and early 1800's, groups of workers reacted with violence to these great changes in their way of life. One of the early leaders of such a group was thought to be named Ned Ludd, and these groups came to be known generally as Luddites.

□ In February (1812), unsigned letters were circulated at Stockport, threatening to destroy the machinery used in the factories of that place. In that month and the following months, attempts were made to set two different factories on fire.

The spirit of discontent then rapidly spread through the neighborhood. Emotional notices, inviting the people to a general uprising, were spread widely. Riots occurred in various places. Houses were robbed by persons in disguise. A report was spread that a general uprising would take place in early May.

The spirit of riot and disturbance extended to many other places. In April, at Middleton, the factory of

Mr. Burton was attacked. The rioters were driven back, and five of them were killed by the military force which had come to protect the factory.

A second attack was made and Mr. Burton's home was burned before military assistance could be brought to help him. In April there were riots again in Stockport. About the same time riots also took place at Manchester. The general excuse for the rioting was the high price of food. Near the end of April the people of Manchester were alarmed by the appearance of some thousands of strangers in their town. Most of the strangers, however, soon disappeared.

Part of the local militia had been called out by then, and a large

military force had arrived. This force had probably frightened those who were inclined to disturbance.

But people in Manchester feared another uprising in May. Night meetings for the purpose of military practice were frequent and arms were seized in various places. A farmer's house near Manchester was plundered, and a laborer coming to his assistance was shot.

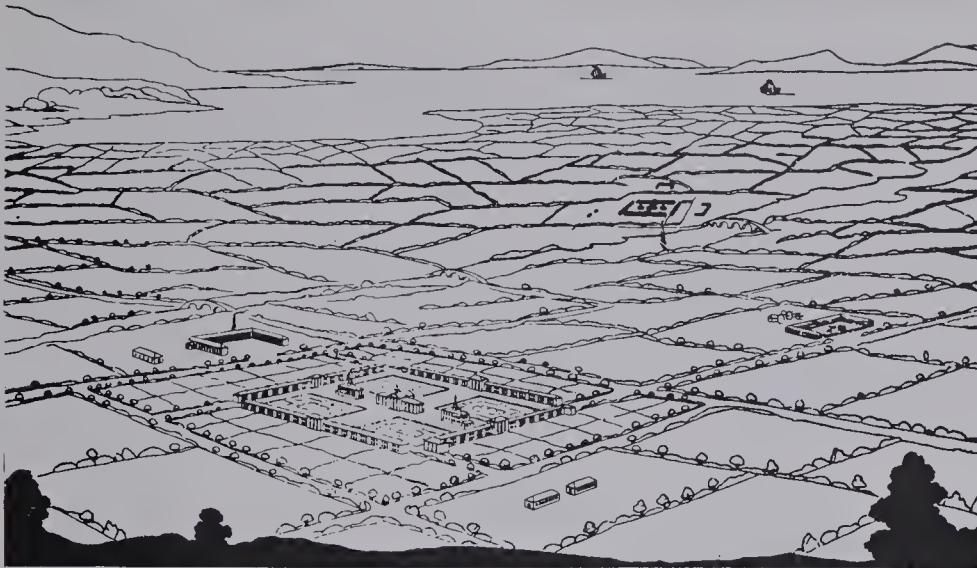
These unhappy people have carried on their proceedings with an extraordinary degree of secrecy and organization. Their signals were clever and well planned, and any attempt to detect and stop the offenders was generally defeated.

(Adapted from the Report of the Secret Committee of the House of Lords on the Disturbed State in Certain Counties, 1812.)

Rioters destroying machinery, about 1830.



▶ A Luddite song and handbill are presented in Research Bank No. 23, pages 125–26.



Owen's plan for his agricultural and manufacturing villages of cooperation.

An Idea for Sharing the Benefits

Another group which criticized the effects of industrialization was led by Robert Owen. Robert Owen, as you have read, began his career as a shopkeeper's apprentice at the age of ten. By the age of twenty-eight, he was manager of the largest cotton mill in England. In spite of his own success, however, he was very much aware of the sufferings of the factory workers. He did a great deal to improve conditions in his own factory, but this could not solve the problem for others. He felt that the system itself had to be changed.

During the 1820's, Robert Owen put forth a number of ideas that he thought would lead to a new and better society. He wanted to divide the whole country into "villages of cooperation." In each village, everyone would work, and everyone would share what was produced. The stress would be on agriculture and small workshops, not large-scale industry. Each village would be able to meet its own needs, and there would be enough for everybody. The whole system would be based on cooperation, instead of competition.



Robert Owen

□ Increased division of labor, and division of interests, means poverty, ignorance, waste, social conflict, crime, misery, and general stupidity. Today we find workers who do nothing all day but put the points on pins, or the heads on nails. These workers stare blankly around them, without understanding or thought of any kind. In the villages

of cooperation, with people doing many kinds of work, we would have a working class full of activity and useful knowledge. The habits, information, and manners displayed by such workers would place the least of them far above the best of any class ever seen before.

(Adapted from Report to the County of Lamarck by Robert Owen, 1821.)

Demanding Political Rights

At the time of the Industrial Revolution, you will recall, Parliament was controlled by the upper classes and the large landowners. The right to vote was very restricted. In 1832, voting rights were extended to include some of the “middle classes,” such as the new factory owners. Even so, only one out of eight adult males had the right to vote.

In 1838, a group of skilled artisans in London drew up a program called the “People’s Charter.” The Charter called for a number of major changes in the political system:

1. voting rights for all adult males
2. equal electoral districts
3. voting by secret ballot
4. no property requirements for members of Parliament
5. payment of salaries to elected members of Parliament
6. annual election of Parliament

Judging by its actions, what did each group think the problem was?

- the Luddites?
- the Owenites?
- the Chartists?

None of these groups was successful at the time. Why do you think each group failed?

The Charter attracted support from workers of all kinds, in all parts of the country. These “Chartists” held public meetings and demonstrations, and they collected over a million signatures on a petition. In 1839, the petition was presented to Parliament—and rejected. In 1842, a second petition, with over 3 million signatures, was also rejected. A third petition in 1848 was rejected, too, and the movement finally broke up.

An 1843 cartoon of Chartists trying to push their program through Parliament.



See Research Bank No. 24, pages 126–27, for the views of the Chartists and of their opponents.

Attempts at Change

Attempts to deal with the effects of the Industrial Revolution continued throughout the 1800's. People kept searching for ways to spread the benefits of industrialization, while reducing the costs. That search has extended into our own time.

One ongoing theme in this search has been the growth of political democracy. Universal suffrage, or voting rights for all, was still a distant goal in the mid-1800's. John Stuart Mill, an English philosopher and economist of the period, frequently expressed his views on representation for the working class:

□ The rights and interests of each and every person are secure only when the person involved is able, and willing, to stand up for them. In this country, for example, the working classes are shut out from all direct participation in the government.

I do not believe that those classes who do participate in the government have, in general, any intention

of injuring the working classes in order to benefit themselves. Yet, do most of the members of Parliament ever, for an instant, look at any question through the eyes of a worker? When a subject comes up in which laborers have an interest, is it considered from any point of view other than that of the employers?

Rulers and ruling classes are

forced to consider the interests and wishes of those who have the right to vote. Therefore, no arrangement of the right to vote can long be satisfactory in which any person or class of persons is left out—in which the privilege of voting is not open to all persons of full age who want to have it.

(Adapted from *Representative Government* by John Stuart Mill, 1861.)

Today universal suffrage is the rule in many countries. *Is extending the vote to all—including workers—the answer?*

Some people sought to spread the benefits of industrialization by changing the economic system. One of the new systems was known as Communism. Two German philosophers, Karl Marx and Friedrich Engels (see page 77), described their theory of Communism in a pamphlet called the *Communist Manifesto*, published in 1848. In their ideal society the motto would be “from each according to his work, to each according to his needs.” Individuals would contribute what they could to society, and they would receive what they needed to live on.

Marx and Engels believed that Communism would have to be spread through violent revolutions. They thought that all conflict in history was conflict between different economic classes. In the 1800's, the class conflict was between factory workers (called the *proletariat*) and factory owners (called capitalists or the *bourgeoisie*). Marx predicted that in each industry power would become concentrated in the hands of a few capitalists. The capitalist class would become smaller and the proletariat would grow. With more available workers to choose from, wages would decline until workers would be getting just enough to survive. Then the proletariat would overthrow the bourgeoisie in a revolution and would control the government.



Labor riots in Bristol, 1831.

The workers themselves would then own and manage the factories. Factories would produce what society needed, instead of profiting owners. Since there would be only one class, there would no longer be class conflict. People would want to work for the society and would not want to receive more than they needed.

Marx and Engels encouraged the development of communist parties in many European countries, mostly among factory workers. The parties remained small up until Marx's death in 1883. But in the 1900's Communists seized control of several countries in Europe and Asia, including Russia and China. Communists have put into effect many of Marx's ideas, but in no country have they completely established Marx's ideal society.

Some of Marx's followers disagreed with him about the need for revolution. These people, usually called "Socialists," believed that a communist system would develop naturally. Today socialist parties govern some Western European countries. In these countries, the governments have taken over a few industries, such as railroads, airlines, radio and television, and mines. *Is control of government and industry by the workers the answer?*

A third major development in the response to industrialization was the growth of labor unions. As early as the 1830's, workers began to organize to help each other as a group or class within society. Labor unions had a number of goals, but their main activity was to bargain with employers over wages and working conditions. Sidney James Webb and Beatrice Webb, English economists, were early supporters of labor unions:

☐ Collective bargaining will be best understood by looking at a series of examples.

In unorganized trades, when the industrial worker applies for a job, he or she accepts or refuses the terms offered by the employer. The worker considers the offer without consulting fellow workers, or considering anything other than his or her own needs.

But if a group of workers join together, and send representatives to bargain on behalf of them all, the situation is changed. Now the employer meets with a united group, and settles, for the time being, the terms of employment of all workers

of a particular kind, in a single agreement.

The skilled workers provide a typical example of the next stage. Through collective bargaining, these unions have obtained formal "working rules," which apply to all the employers and workers in the area. These "working rules" settle, for a certain period of time, such matters as the hours of beginning and ending work, the minimum rate of wages, the payment of overtime, the age and number of apprentices to be hired. They also settle the holidays to be allowed, the notice to be given by employers and workers when ending employment,

the arrangements for meals, and the safe care of tools.

In the best organized industries, we see still further development. The general level of wages in all the cotton-spinning towns, for instance, was settled by national agreements between the cotton-spinners' union and the employers' association. General advances or reductions are negotiated from time to time, with careful thought and planning, between the national representatives of workers and of employers.

(Adapted from *Industrial Democracy* by Sidney and Beatrice Webb, 1897.)



A large rally of the labor unions in the industrial city of Birmingham, 1832.

Today labor unions are important forces in the political and economic life of many countries. They support political reform, social security and unemployment benefits, and educational programs. *Are labor unions, which enable workers to seek reforms as a group, the answer?*

Analyzing the Evidence

1. We have seen that different groups of people tried in different ways to deal with an industrialized society.
 - How did each group define the problems of industrialization?
 - What solution did each group offer?
 - What did they hope to gain by their actions?
 - What did the members of each group seem to value?
2. These groups all sought to spread the benefits of industrialization. While some of their goals overlapped, their suggested methods and solutions varied widely. A number of these goals have been realized and, taken together, have helped people deal with the effects of industrialization.
 - What are the advantages of each of the solutions offered? the disadvantages?
 - What other ways can you think of to spread the benefits of industrialization?

THE INDUSTRIAL REVOLUTION TODAY

In many parts of the world—Europe, North America, Japan, Brazil, Venezuela—the Industrial Revolution is now a way of life. Big farms, big factories, big cities, a money economy, machines and gadgets of all sorts are taken for granted. In other parts of the world—in many countries in Asia, Africa, and Latin America—the Industrial Revolution is still in its earliest stages. In almost all of today's developing countries, however, industrialization is accepted as a national goal. Thus, many of the same basic questions we have been asking are now being faced by people in many different countries.

Mohandas Gandhi and Jawaharlal Nehru, two of India's most important political leaders in this century, expressed their views on industrialization:

□ Our ancestors . . . saw that happiness was largely a mental condition. People are not necessarily happy because they are rich, or unhappy because they are poor. The rich are often seen to be unhappy, the poor to be happy. . . .

We have managed with the same kind of plow that was used thousands of years ago. We have retained the same kind of cottages that we had in former times, and our education remains the same as before. We have had no system of life-corroding competition. . . .

It was not that we did not know how to invent machinery; but our ancestors knew that if we set our hearts after such things, we would become slaves and lose our moral fiber. . . . They saw that our real happiness and health consisted in a proper use of our hands and feet. . . .

And where this cursed modern civilization has not reached, India remains as it was before.

(From *Indian Home Rule* by Mohandas K. Gandhi, published by Navajivan Trust. Reprinted by permission of the publisher.)

Technician doing precision work at a camera factory in Japan.





Farmers herding cattle in the Australian countryside.

□ In the context of the modern world, no country can be politically and economically independent unless it is highly industrialized. Nor can it achieve or maintain high standards of living, or end poverty, without the aid of modern technology in almost every sphere of life.

An industrially backward country will continually upset the world balance of power. It will encourage the aggressive tendencies of more developed countries. Even if it remains independent, this will be in name only; economic control will

tend to pass to others. This control will inevitably upset its own small-scale economy, which it has tried to preserve in pursuit of its own way of life.

If technology demands the big machine, then the big machine, with all its implications and consequences, must be accepted. To cling to outworn and out-of-date methods of production is to arrest growth and development.

(Adapted from *The Discovery of India* by Jawaharlal Nehru, copyright 1946 by The John Day Company. Reprinted by permission of The John Day Company, publisher.)



Construction workers building a road in the mountains of Peru.

► For opinions on the effects of the Industrial Revolution on the quality of life, see Research Bank Nos. 25–26, pages 127–28.



Top: A shopping center in Teheran, the capital of Iran. Right: Engineers for an oil company in Nigeria working with maps.

Expressing Your Views

1. Look at the list of "happiness" requirements which you made for yourself at the beginning of this Unit (page 3). Are there any items that you want to add? to remove? to move up or down on your list? Make a new list, if necessary.
2. In what ways might your own ideal of "happiness" be easier to achieve because of the Industrial Revolution? In what ways might it be harder to achieve?

Now, keeping your own values in mind, consider these questions.
As we industrialized:

What did we gain?

What did we lose?

Was it worth it?

Research Bank:

READINGS FOR

THE IMPACT OF THE
INDUSTRIAL REVOLUTION

1. Life in England

Before the Industrial Revolution

What was England like before the Industrial Revolution? By the late 1700's England was a strong trading nation and London was a bustling city. Yet most people lived in the countryside and worked at farming. Many of England's products—such as woolen cloth—were made by country people in their homes. When the enclosure movement grew rapidly at the end of the 1700's, it caused great changes in the lives of people in the countryside.

In this section are observations of English city and country life before the Industrial Revolution by people of the time and by modern historians. At the end of the section, several historians describe the effects of enclosure on the English people and on the nation's economy.

LIFE IN THE ENGLISH COUNTRYSIDE

1. The English Village—A Pattern of Continuity

Through the centuries, the patterns of English country life did not change greatly. Tradition guided people in all groups of society. People lived, worked, farmed, and celebrated their festivals according to time-honored customs.

These four readings describe life in an English village before the Industrial Revolution. The first reading is a modern historian's description of village life. In the second, a villager describes the festivals of his youth in Lancashire. The third reading describes the estate of a country squire. It is taken from *Tom Jones*, a famous novel written by Henry Fielding in the 1740's. The final reading is an entry from *The Spectator* by Joseph Addison and Richard Steele. *The Spectator* was a popular journal that commented on the social customs of England in the early 1700's. The character of Sir Roger de Coverley is fictional, but the duties of the gentry described in the reading were real.

What part did the church play in village life? What role did the gentry play? What do the festivals and celebrations tell us about village life?

England as a Rural Society

□ England was definitely not an urban country before the arrival of the Industrial Revolution. It was a large rural region composed of small settlements. These were loosely attached to the vast city of London by a network of small local centers.

In England at least, we are right to think of the world of the 1700's as a world of farms, fields, and country living. We are right to think this even if we are wrong to go on believing that we should all still be living in the countryside.

The word "settlement" accurately describes the villages and hamlets [clusters of houses in the country that are part of a village] of England. They were, in fact, the knots of houses originally set down by the first colonizers of England. These settlements were still being lived in and run by their descendants after a thousand years or more. Each group of farmhouses was surrounded by the farmland which had been laid out for it—enough land to support the people who lived there. Therefore, settlements came thick and fast in those areas where the land was rich and flat and easy to farm, and where the rivers flowed together.

Importance of the Church. If there was a church or chapel close enough, every meeting of the village community took place there. The use of the church building as a community meeting place was central to village life. Here they met, these farming householders, not all of whom could read. They sat in the building put up by their ancestors many centuries

before. They repaired the church and made it even more beautiful each year. In this place where they came so often to pray, they elected their neighbors to the traditional public offices—both civil and religious.

The only public appearance of women and children was at service in church. This was almost their only trip outside the circle of the family. Wives and women servants might take poultry and eggs and sell them at the market. But otherwise they stayed at home. Except in church ordinary people did not usually find themselves in a group inside a building larger than their house. For the men of the village, especially the wealthier ones, there were occasional meetings at the homes of the large landowners. These meetings regulated farming in the village.

Duties of a Large Landowner. The gentleman-landowner of the district—who was considered the “Lord of the Soil”—sometimes owned less than half the land. However, he played a central role in the village, as he had for centuries.

The landowner's treatment of his tenants was dictated partly by custom of the district, which was treated as local law—and by custom in general. This might restrict his power to set the length and conditions of his leases, and even the amount of his rents. Custom—what his neighbors in the village expected and what had always been done—would certainly influence him in making his many other decisions. He had to decide how much of his land he would “keep under his own hand,” as the saying went. This land he would work with his own servants. Or he had to decide how much work he would have done by laborers who came from the village to work his land as day-laborers.

He also had to decide whether he would feed these day-laborers during their workingtime, or pay them extra so that they could bring their own food. If he chose to “table” them, then he had to organize his housekeeping to provide this service.

If a landlord chose to live away from the community in one of his other houses, or in London in a rented home, he might decide to take no responsibility for running any of his land. In that case he would usually rent out as much of his estate as he could. His bailiff [superintendent of the estate] or his tenant would also get as much of the work done as possible by “putting it out to task”—hiring others to do the chores and work the land.

But the social duty of every “Lord of the Soil” was clear. He was expected to live in his manor house. He, or his tenant, was also expected to keep

a household of servants and to prepare meals for the day-laborers. This was not by any means a matter of custom alone. It was also practical. The household servant system was better than renting out the land because raising crops and tending livestock went on in the night as well as the day.

(Adapted from *The World We Have Lost* by Peter Laslett. Copyright © 1965 Peter Laslett. Reprinted by permission of Charles Scribner's Sons and Associated Book Publishers Ltd.)

Festivals in Lancashire

□ **Christmas.** It was the custom for weavers to give to each child a certain amount of work about two or three weeks before Christmas. This extra work had to be finished before the holidays began. The children agreed on the favors and gifts which were the rewards of the task. In most families, spiced bread and potato custard would be made. And an extra piece of beef and some good cheese would be set aside. No one would touch these until the work was done.

The work then went on merrily. Play hours were nearly given up, and whole nights would be spent at the loom. Occasionally the weavers would sing a hymn or Christmas carol while they worked. They would rest for a few hours in the late morning. Then they would take up their work again, and the singing and rattling of shuttles would continue almost without stopping throughout the day. In my uncle's family, we were all singers, and hardly a day passed in which several hymns were not sung. As Christmas approached we frequently sang to keep ourselves from falling asleep.

When the extra work was done, the cuts of cloth were picked and made ready to be sent to the warehouse. After the cloth was sent out, the people swept the loomhouse and put it in order. The house was cleaned, the furniture polished, and then the holidays began. The fruit loaf was sliced, and the lads and lasses went out to play. The boys generally played football, and both boys and girls went sliding when there was ice on the ground. In wet weather we would have a swinging rope in the loomhouse or we would spend the day going from house to house among our playmates.

We would finish in the evening by gathering in parties of a dozen or more boys and girls. By some warm, comfortable fireside, we sat singing carols and hymns, playing at parlor games, proposing riddles, and telling ghost stories until our hair began to stand on end. And when we broke up, we ran home, not daring to look behind us for fear that the devil himself would be at our heels.

At this season it was also the custom for the caretaker and the bell-ringers of the church to go from house to house, wishing their neighbors a merry Christmas. They were generally invited to sit down, and were presented with refreshments and a present of money. This was done at most of the houses, especially if the weaving trade was going well. Dissenters [those people who disagreed with the beliefs of the Church of England] as well as church people gave. Religious differences had not yet so far divided the people into arguing groups as to make them forget how to be good neighbors.

Nor were the hard-working coal miners shut out from the Christmas celebrations. They also made it a custom to visit their neighbors. And they were treated with refreshments or money, or both, depending on how much money the family had. The poor sympathized with the poor. Their sympathy was expressed by action, as well as word. "Come, Jim, have a slice of my loaf. Now, Bill, take a cup of my punch. You deserve what you can get. I live and work here in cheerful day and sunlight. You spend your life in constant danger, and in little dark cells underground. Come, you don't need inviting. You are heartily welcome, and you can never be paid too much for your labor." Thus the weaver and the coal miner would return each other's good wishes.

Easter. On Easter Wednesday what was called "The White Apron Fair" was held at Middleton. It was an occasion for young wives, mothers with their children, and maids of marrying age to walk out, dressed in their best, with their husbands or sweethearts. Their destination was the inn. There the ladies generally finished with a dance, while their sweethearts finished with a fight or two. The results were bruised skins and torn clothes.

The Rush-bearing. This was the grandest feast of the year. It was held on the anniversary of the dedication of the church. At Middleton, it was held the last Saturday in August. From tradition, as well as custom itself, we may conclude that at first it was a simple offering to make the church floor comfortable during the winter services. At that time, every family had its separate bench to sit upon. At first one or two families would scatter rushes [a kind of reed] on the floor around their bench to keep their feet warm during the stormy months. Others, seeing how snugly and cosily their neighbors sat, would follow their example. Probably the priest would encourage the new luxury of rushes covering the floor, and it would soon become common. Thus Nan and Dick, and Bob and

Bet, would be seen carrying bundles of rushes to the church at the feast of the dedication, and the floor of the church would be covered with rushes for the winter.

Next, families living near each other in parts of the parish would unite their efforts. Each family would place its share of rushes into a cart, and the group of families would send down a load. Probably some group, in hopes of winning the priest's favor, would give extra signs of respect to the church. They would decorate their rushes with the green branches of trees. Others would do still more and decorate their rushes even more beautifully. A contest would follow as to who could bring the neatest and most finely decorated load of rushes. As the years went by, our present charming and graceful "rushcart" was produced.

Music, dancing, and merry costumes would accompany and keep pace with the increasing display of decorated carts. The feast became a spectacle for all the surrounding districts. Each year, the little wood-shadowed village would become a scene of joyous gathering and friendly merrymaking. And this is how the yearly parish festivals gradually came to be—as they existed in my youth.

(Adapted from *Early Days, or Autobiography of Samuel Bamford*, by Samuel Bamford, 1848.)

A Squire's Estate

□ The Gothic style of building could produce nothing nobler than Mr. Allworthy's house. It stood on the southeast side of a hill. But it was nearer the bottom than the top of it, so it could be sheltered from the northeast by a grove of old oaks. This grove rose above it in a gradual climb. Yet, the house was high enough to enjoy a most charming view of the valley beneath.

In the midst of the grove was a fine lawn, sloping down toward the house. Near the top of the lawn rose a plentiful spring, gushing out of a rock covered with fir trees. The spring formed a constant waterfall. It tumbled in a natural fall over the broken and mossy stones till it came to the bottom of the rock. Then it ran off in a pebbly channel, that winded along with many smaller falls, till it fell into a lake at the foot of the hill.

The lake was seen from every room in the front of the house. It was decorated with groups of beech and elm trees, and sheep grazed there. Out of the lake flowed a river. This river wandered for several

miles through an amazing variety of meadows and woods till it emptied itself into the sea.

On the right of the valley opened another smaller valley which was adorned with several villages. At the bottom of the valley there was a tower of an old ruined church overgrown with ivy. Part of the front of the church still remained.

The left-hand scene presented the view of a very fine park. It was composed of very unequal ground, and agreeably mixed with all the variety that hills, lawns, wood, and water could give. It was laid out with admirable taste, but it owed more to nature, than to art. Beyond this, the country gradually rose into a ridge of mountains, the tops of which were above the clouds.

(Adapted from *Tom Jones* by Henry Fielding, 1749.)

Sir Roger de Coverley at Church

□ My friend, Sir Roger, being a good churchman, has beautified the inside of his church with several prayer books and Bibles that he has chosen himself. He has also given a handsome pulpit cloth and put a railing around the communion table at his own expense. He has often told me that, when he inherited his estate, he found that his parishioners rarely followed regular church customs. So in order to make them kneel and join in the responses properly, he gave every one of them a cushion for the knees and a Common Prayer Book. At the same time, he hired a traveling singing master to go about the country and instruct the people in the tunes of the Psalms. Now they put great value in their psalm-singing. Indeed they outdo most of the country churches that I have ever heard.

As Sir Roger is landlord to the whole congregation, he keeps them in very good order. Yesterday in church I was extremely surprised to hear my old friend, in the middle of the service, call out to one John Matthews to watch what he was doing and not disturb the congregation. It seems that this John Matthews is remarkable for being an idle fellow. At that time he was kicking his heels for his own amusement. Although Sir Roger exercises his authority in that same odd manner in all areas of life, it has a very good effect upon the parish. The parish members are not refined enough to see anything ridiculous in his behavior. Besides that, the general good sense and worthiness of his character makes his friends observe these little peculiarities as

ornaments that highlight rather than spoil his good qualities.

When the sermon is finished, no one dares move until Sir Roger has left the church. The knight leaves his seat near the altar and walks down the aisle between a double row of tenants who stand bowing to him on each side. Every now and then he asks how someone's wife, or mother, or son, or father is doing if he does not see them at church. The parishioners understand this as a secret scolding to the person who is absent.

The chaplain has often told me that when Sir Roger has been pleased with a boy who knew his religious lessons, he has ordered a Bible to be given to the boy to encourage him in his studies. Sometimes Sir Roger accompanies it with a portion of bacon for the boy's mother. He has also added five pounds a year to the chaplain's salary. And to encourage the young fellows to learn the church service perfectly, he has promised to hire the new chaplain according to merit—when the present very old one dies.

The understanding between Sir Roger and his chaplain and their mutual aim in doing good is even more remarkable because the very next village is famous for the differences and arguments that rise between the parson and the squire. There, these two live in a never-ending state of war. The parson is always preaching at the squire. To take his revenge on the parson, the squire never comes to church. The squire has made all his tenants non-believers and has encouraged them to withhold their annual taxes to the church. Meanwhile, the parson instructs them every Sunday in the dignity of his order. And in almost every sermon he hints to them that he is a better man than his patron, the squire. In short, events have come to such a state that the squire has not said his prayers either in public or in private for the last six months. And the parson threatens to pray for him in front of the whole congregation if he does not mend his manners.

Although arguments of this sort are frequent in the country, they are very dangerous to the ordinary people. They are so used to being dazzled by riches that they pay as much respect to the opinions of a man with an estate as they do to a man of learning. No matter how important a truth may be that someone preaches to them, the common folk hardly pay any attention to it when they know there are several men with incomes of five hundred pounds a year who do not believe it.

(Adapted from *The Spectator*, No. 112, July 9, 1711.)

2. Cottage Industries

In 1750 two out of three families in England worked on farms. But farming varied from season to season. During the spring plowing and planting, and during harvest times in the summer and fall, people worked from dawn to dusk in the fields. But in winter, there was little farm work to do. Therefore, many families earned extra money during the winter months by producing manufactured goods, such as shoes or cloth, in their homes. Because the work was done at home, in the farmers' cottages in the countryside, this way of producing goods was called *cottage industry*.

A widespread cottage industry was the manufacture of wool cloth, which involved sorting, carding, spinning, and weaving the wool. In many homes the whole family was involved in these tasks. Before 1770 most cloth in England (and in other parts of Europe as well) was produced by this system of cottage industry.

The following selections are descriptions of English cottage industries in the years before the Industrial Revolution. What were some English cottage industries in the 1700's? Describe how wool cloth was made and distributed in the early 1700's. What changes took place in the wool industry as it grew? How did the opportunities for cottage weavers change?

Examples of British Cottage Industries

□ In the villages, there were some people who were permanent farmhands. However, most work depended on the seasons. The people of the village were able to earn good money at hay and harvest times. And they could make a little money during the winter by threshing. Between farming seasons, many of them worked at some cottage industry. The women spun. In Bedfordshire the children were sent to lace-making schools when they were little more than infants. In Hertfordshire they braided straw. In that part of the country where willow trees grew, willow baskets were woven. In Northamptonshire, where cattle-raising supplied the leather, shoe-making was widespread. Thus there were a great many small local cottage industries. And there were few villages where a hard-working family could not find such employment.

(Adapted from *Industrial England 1776–1851* by Dorothy Marshall. Copyright © 1973 Dorothy Marshall. Reprinted by permission of Charles Scribner's Sons and Routledge & Kegan Paul Ltd.)

The Organization of the Woolen Cottage Industry

□ The weaver's cottage had a few, narrow windows, little furniture, and even less decoration. The main room—sometimes the only room—was used as a kitchen as well as a workshop. There stood the loom of the weaver.

The weaver's loom was similar to the looms which had been used since the earliest days. Years before [in 1733] an invention, the flying shuttle, had made it possible to work the shuttle with one hand. But the use of this improvement spread slowly. The rest of the loom was very simple. Hand cards were used for carding the wool. One of the cards was attached to a wooden support which did not move. [The other card was brushed against this stationary one, with the cotton fiber in between.] For spinning, the old-style hand or foot spinning wheel was used.

The weaver with a small sum of money to invest could easily afford the needed equipment. The water for removing the grease from the wool and for washing the cloth was at his door. If he wanted to dye the cloth, a tub or two was all he needed. There were separate buildings for the things which could not be done so cheaply or easily. For instance, a water mill was used for cleaning the wool, and all the local weavers brought their cloth there. It was called a public mill, because everyone could use it for a fixed price.

Organization of Labor. The system of labor was also organized simply. If the weaver's family was large enough, it did all of the work. The family divided the jobs among themselves. The mother and daughters worked the spinning wheel. The boys carded the wool. And the father worked the loom.

In practice, however, this simple arrangement was rarely found. It was usually necessary to have people outside the family spin some of the wool. One loom, working regularly, used the thread produced by five or six spinners. The weaver had to search to find these spinners. He went from house to house until he had distributed all his wool. It was in this way that families first began to specialize in one step of wool production. There were cottages in which only spinning was done. Other homes contained only weaving looms. So, even though the weaver continued to weave, he now had a number of people working for him. He was now a small manufacturer, called a "clothier."

Market Day. The market at Leeds was held in a street known as the Briggate. Long counters were



Villagers exchanging goods and gossip in the marketplace.

set up on each side of the street. The clothiers came early in the morning with their cloth. Few clothiers brought more than one piece. At seven o'clock a bell rang, and the street filled. The counters were covered with goods, each clothier standing behind his piece of cloth. The merchants walked up and down, choosing and buying. An hour later it was all over.

In Halifax, all the local clothiers came to town on Saturdays, each carrying the cloth he had made. The cloth merchant went to the Hall where the clothiers displayed their cloth. There the merchant bought white cloth. Later, he had it dyed or finished to meet his needs. So many clothiers came each Saturday that the Hall was not big enough to hold them all. So the whole town became one huge white cloth hall. Cloth was displayed in every street, square, and inn. In the evening, an incredible number of clothiers could be seen going home on horseback or in small carts.

The Small Manufacturer. This group of clothiers made up a large part of the population around Leeds in 1806. They all had about the same size business. A man who owned four or five looms was considered unusual. There was little difference between the clothiers and their workers.

The workers often ate and slept in the master's house and worked beside him at the loom. They did not consider their masters to be above them socially. In some places there were more masters than workers. In fact, most workers could eventually become masters. A young man of good character could always get a loan to get started as a small master manufacturer. The "manufacturer" at that time was not a business tycoon. Instead, he

was a craftsman working with his own hands. So the manufacturer was the employer and employee at the same time.

He was also a landowner because his house stood on a few acres of land which he owned. One observer wrote that a clothier must have one or two horses. He needed them to get wool and food in town and to bring the wool to the spinner. He also had to transport the cloth to the water mill and finally to market. Observers also noticed that in addition most clothiers had a cow or two to supply their family with milk. This small property increased the wealth of the clothier. He rarely planted crops, for farming was too risky. But he could raise poultry, a few cattle, and a horse. Although agriculture was not his main occupation, part of his earnings came from the land. This helped make him more independent.

The Merchant Manufacturer. After a time, the wool cottage industry was producing more goods than the local people could buy. The industry could continue to grow only with the introduction of the cloth merchant. Because the clothier could not sell all of his goods, he arranged with a cloth merchant to buy them. The merchant then sold them again—in other parts of Great Britain or overseas. This merchant held in his hand the fate of the whole industry, and he affected production as well.

The cloth merchant was a businessman, instead of a craftsman. Often he acted only as a middleman between the weaver and the shopkeeper, although he usually paid for certain minor details in the manufacture. For example, when the weaver delivered his cloth usually it was neither finished nor dyed. The merchant took charge of the process

of finishing the cloth before it was sold in the shop. To do this he had to hire workers. In doing so, he became an employer.

In the southwest counties of England, the cloth merchant became involved in the whole process of the manufacture of woolen cloth. He had become a merchant manufacturer. First he bought the raw wool. Then he paid the workers to card, spin, weave, and clean it. He was the owner of the wool at every stage of this process. The workers whom he hired became employees in the service of an employer.

The Weavers and Spinners. The weavers and spinners employed by the merchant manufacturer were still in a very different position from the workers in a modern factory. Most of them lived in the country and earned part of their living from agriculture. Weaving and spinning were often no more than extra jobs for them. The men worked in the fields while the women spun wool. The merchant manufacturer brought the wool from the neighboring town.

Agriculture and industry were often closely related. Increased activity in one area meant a decrease in the other. In winter, when outdoor work was impossible, the hum of spinning wheels could be heard in every cottage. But at harvest time, the spinning wheels and looms went untouched. A 1662 Act of Parliament said, "It has long been the custom to stop weaving at harvest time. The spinners are mainly employed at harvest work at that time."

The Agents. Wealthy merchant manufacturers often bought their wool in large quantities. To get it spun cheaply, they were forced to send it great distances—often 45 miles (72 kilometers) or 60 miles (96 kilometers) away. They had to hire agents to distribute the work. These agents were sometimes farmers and often village innkeepers.

This system had its drawbacks. The innkeeper dealt with people who were his regular customers. Since he could not afford to upset them, he was not too particular about the quality of their work. The merchant manufacturer sometimes complained about this. We have already seen that the clothier had to hire outside labor. This practice of hiring outside help became more and more common.

The Weaver's Loss of Independence. After the spinners finished their work, the wool was given to weavers. At first the weaver appeared to be self-employed and independent. He worked at home on his own loom. Sometimes he even became the em-

ployer and took charge of the manufacture of the cloth. He often paid workers to do the carding and spinning. He supplied the tools and some of the raw materials. And he did not work for a single master. He often did work for four or five different merchant manufacturers.

But he was poor. After deducting the wages he had to pay to his workers, the weaver had very little left. If he had a bad year and the harvest was poor, he was in difficulty. He had to borrow money. Who was the most likely person to lend it to him? The merchant manufacturer who employed him. The merchant manufacturer was usually willing to lend the money. But the security for the loan was usually the weaver's loom. Not only had the weaver become a mere wage-earner, now he did not even own the loom with which he earned his wage.

In this way, the merchant manufacturer became the owner not only of the weaver's raw wool but also of the equipment. During the early 1700's this slow and unnoticed change in the position of the weaver steadily continued. Finally, the merchant manufacturer owned the wool, the yarn, the loom, the water mill, the cloth, and the shop where the cloth was sold.

(Adapted by permission of Jonathan Cape Ltd. and the Estate of Paul Mantoux from *The Industrial Revolution in the Eighteenth Century* by Paul Mantoux.)

LIFE IN LONDON

3. In Praise of London

London was the center of business, political, and cultural life in Great Britain. As Samuel Johnson, a London critic and wit of the time, remarked, "He who tires of London, tires of life." It was a magnet for the young men and women of the countryside. Different groups of people lived in various sections of the city.

These three readings describe the excitement of London in the 1700's. The first reading is by James Boswell, the biographer of Samuel Johnson. Next, Horace Walpole, an English statesman, comments on a London building boom. The final selection is an observation of the London Stock Exchange taken from *The Spectator*.

How does each writer describe London? Compare life in London to life in the countryside in the 1700's.

London's Greatness

□ Talking of London, Dr. Johnson observed: "Sir, if you wish to have a true idea of the greatness of this city, you must not be satisfied with seeing its large streets and squares. You must also inspect the many little lanes and small streets. The wonderful vastness of London consists not in the showy appearance of a long series of great buildings, but in the many different types of human dwellings which are crowded together."

I have often amused myself with thinking how different a place London is to different people. Those people whose minds are narrowly concerned with one particular interest or career view the city only in that way. A politician thinks of it merely as the seat of government and its various departments. A person who raises beef cattle for sale sees London as a vast cattle market. A merchant sees it as a place where a great deal of business is done upon the Stock Exchange. A person who loves the theater sees it as the grand scene of dramatic entertainments.

But the intellectual person is struck with London because it takes in the whole of human life, in all its variety. And this study is unending.

(Adapted from *The Life of Samuel Johnson, L.L.D.*, by James Boswell, 1791.)

The Building Boom of 1776

□ Rows of houses shoot out of every ray like an octopus. So great is the rage for building that if I stay here two weeks without going to town, I look about to see if no new house is built since I went out last.

(Adapted from writings of Horace Walpole in *Eighteenth Century London Life* by Rosamund Bayne-Powell.)

At the Stock Exchange

□ There is no place in the town of London which I love to visit as much as the Royal Stock Exchange. As an Englishman, it gives me a secret satisfaction, and in some ways it rewards my pride, to see so rich a gathering of countrymen and foreigners. They are consulting together about the private business of all the world's citizens and making this great city a kind of marketplace for the whole world.

I must confess I look upon the Royal Exchange as a great council in which all the important nations have their representatives. Financial agents

in the trading world are like ambassadors in the diplomatic world. They make arrangements, conclude treaties, and maintain communication between those wealthy societies of people that are divided from one another by seas and oceans or live on the different ends of a continent. I have often been pleased to hear arguments settled between an inhabitant of Japan and a councilman of London. Or I have seen a subject of the Great Mogul of China entering into an agreement with one of the subjects of the Czar of Russia.

I am extremely delighted in mixing with these ministers of trade and commerce. They are so clearly recognized by their different appearances and different languages. Sometimes I find that I am pushed and shoved among a group of Armenians, and sometimes I am in a group of Dutch traders. I am a Dane, Swede, or Frenchman at different times. I like to think of myself as the old philosopher who, when he was asked what country he was from, replied that he was a citizen of the world.

(Adapted from *The Spectator*, No. 69, May 19, 1711.)

4. The Hazards of City Living

All of London's citizens suffered from the street crime, the disease, and the general nuisances of a large city that did not have street lighting, a police force, or a proper sewage system. The health and safety of London's citizens began to improve by the end of the 1700's. However, the city was still a dangerous and dirty place in which to live.

The first selection describes a crime-ridden section of London. The second is from a 1718 report on crime in London by the city marshal. The final reading is a 1750 listing of nuisances found on London's streets.

What were some of the dangers that people in London faced? What were some of the health hazards?

Thieves' Hiding Places

□ The most striking thing about the parts of London where the poor people lived is that in many cases they were dangerous areas. The poor lived mainly in the maze of courtyards and alleys built in earlier days.

A writer described these districts in 1751. "When you consider the different sizes and shapes of the buildings, the great number of alleys, courtyards, and by-ways, you would think these sections were built to be hiding places. They are like a great forest where a thief can hide as safely as wild animals do in the jungles of Africa."

(Adapted from *London Life in the Eighteenth Century*, by M. Dorothy George.)

The City Marshall's Report

□ It is the general complaint of the taverns, the coffee houses, the shopkeepers, and others that their customers are afraid to come to their shops and houses when it is dark. The customers fear that their hats and wigs will be grabbed from their heads, or their swords taken from their sides. Or else they fear that they may be blinded, knocked down, cut, or stabbed.

Traveling by coach cannot protect them. While riding in their coaches they are cut and robbed in the same manner. In this way, the trade and business of the city is greatly disrupted.

(Adapted from City Marshall's remarks, 1718, in *London Life in the Eighteenth Century* by M. Dorothy George.)

1750 List of Nuisances

1. Manure left lying in the streets, especially at the rear entrances to the city gates, and on the north side of the Royal Stock Exchange.
2. Garbage lying in the streets.
3. Open cellar doors or stone steps projecting into the streets.
4. Broken pavements.
5. Run-down houses.
6. Stalls for shops, protruding from the walls of churches.
7. Streets blocked up with sheds and stalls.
8. Newly built houses jutting into the streets.
9. The herding of cattle through the streets.
10. The large number of mad dogs.
11. The masses of beggars.
12. The flood of foul language in the streets.

(Adapted from *Essay on Improvements* by Gwynn, 1750, in *Eighteenth Century London Life* by Rosamund Bayne-Powell.)

ENCLOSURE AND ITS EFFECTS

5. Who Was Hurt by Enclosure?

As we have seen, England's Enclosure Acts divided the common land among the landowners in a village. The more land people owned, the more land they received in enclosure awards. With enclosure, cottagers who had traditional rights to use the common land sometimes received an acre or two of their own.

Some historians believe that the small landowners and cottagers were victims of the enclosure system. They were powerless against a Parliament whose members were large landowners. Other historians believe that the enclosure procedure in Parliament was fair to both large and small landowners. They argue that small landowners and cottagers did not suffer, but rather increased their holdings.

In the following two selections, modern historians who believe that the small landowners were hurt by enclosure explain how difficult it was for them to fight an enclosure bill.

What obstacles did small farmers and cottagers face in defending their rights? In what ways might the enclosure awards have affected them?

The Rich Got Richer

□ The bill for enclosure in Parliament was probably considered by a committee of large landowners. When small landowners presented petitions against the bill, they could be ignored.

The law itself often gave special preference to the lord of the manor. These lords may have appointed the officials who carried out the enclosure. So, they were usually given the best or largest shares of the land. The small farmers and cottagers did not always make their claims in the proper legal form. Thus, their claims were often rejected or ignored.

(Adapted from a summary of the views of J. L. and Barbara Hammond in *The Agricultural Revolution 1750-1880* by J. D. Chambers and G. E. Mingay. Reprinted by permission of B. T. Batsford Limited.)



Surveyors measuring an open field during enclosure of an English village, 1798.

The Poor Got Poorer

□ Enclosure was a clear case of the rich robbing the poor. It was played by the rules of property and law, written by a Parliament of property-owners and lawyers.

In village after village, enclosure destroyed the poor people's bare means of survival—the cow or geese, the fuel from the common land, and the gleanings. If a cottager had no proof of his rights, then he was not paid for his loss. Sometimes a cottager could prove his claim. Then he was given a piece of land which was not large enough for his survival. And he was forced to pay more than his share of the high enclosure costs.

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6. Historians Look at the Results

Enclosure brought about major changes in the lives of English people living both in the countryside and the city. Enclosure took place in a few villages as early as the 1200's, became more widespread in the 1500's, and then dropped off. Most of the villages in England had their land enclosed between 1760 and 1830. This enclosure movement almost totally ended the old system of open fields in England.

Enclosure changed the English countryside. Before enclosure, farmers raised crops and livestock mainly to provide food for themselves. By 1850 English farmers were able to sell most of their products in the cities—where two thirds of the English population lived by that time.

Here are two modern historians' views about the results of enclosure. In their opinions, what were some of enclosure's social effects? What were some of the economic effects of enclosure on the countryside? on the English economy?

Some Economic Effects of Enclosure

□ The population of the countryside grew almost as fast as that of the industrial cities. Enclosure of the common fields required the building of fences, the planting of hedges, and the digging of ditches. This work needed more laborers, rather than less. The need for more laborers increased as the population grew and the price of grain soared. They were needed to convert the commons and swamps into crop-growing fields.

Land Ownership Changed. Research has revealed that after the 1780's, enclosure by Acts of Parliament produced an *increase* in all types of land-owners. Under the Enclosure Acts many cottagers who previously had rights to the common land were paid a small sum for the loss of those rights. For the first time, these cottagers were able to buy small plots of land. For a while (during the Napoleonic Wars with France) when grain prices were so high, the cottagers were able to make a living from these small plots.

Enclosure, aided by rising grain prices, made many small farms profitable. The decrease in the number of small landowners came after the end of the Napoleonic Wars in 1815. At that time, prices plunged and welfare rates soared. By then, only the large landowners could hope to survive. The number of people who worked in farming kept on

increasing throughout the enclosure period. It was not until after the middle of the 1800's that the number of farmworkers definitely declined.

New Attitudes. Changes in methods and in the size and organization of farms occurred in this period of enclosure after 1750. But the most important changes were in the farmers' attitudes about their farming methods. Over long periods of time, population, industry, and the cities grew. As a result, the market for farm goods gradually increased. To meet the increased demand, farmers became more willing to try new methods and to combine small farms into larger ones.

Increased agricultural production removed some of the barriers to the further growth of population, the cities, and industry. And this growth, in turn, created new chances for farmers. Farming had become an industry. People were the most important element in this process of development and change. The great changes in farming resulted from the farmers' own willingness to try new methods of farming and organization on a large scale.

Increased Production. The agricultural industry did not actually supply the workers that the Industrial Revolution needed. But it did supply the food for the growing population from which the labor force was drawn. Between 1751 and 1821, the population of England and Wales more than doubled. Even so, Great Britain was able to supply most of the grain needed to feed its people.

If the agricultural industry had not risen to the challenge of increased population, the Industrial Revolution probably could not have happened. Great Britain is a small area with few natural resources. Without increased agricultural production, it would have had to import food, instead of the raw cotton, iron, and wool that the new industries needed. Because British farmers met the challenge, British money stayed home, instead of being spent overseas.

As farmers made more money, they were able to buy more British industrial products. This made it reasonable for industry to produce on a large scale. And it made factories profitable.

More Money. Finally, agriculture provided much of the money to get the Industrial Revolution off the ground. Most of the early ironworks, for example, were built by landowners. And farmers were well-known supporters of plans to improve local communications by road, river, and canal. Many of the new industrialists came from a farming background. They found the money to invest in new in-

dustries, either by using their land as a guarantee, or by borrowing money from other farming friends and neighbors.

(Adapted from *The First Industrial Revolution* by Phyllis Deane. Reprinted by permission of Cambridge University Press.)

Some Social Effects of Enclosure

□ Farming techniques had been gradually improving since the late 1600's. However, most farmers kept their traditional methods and attitudes until the late 1800's. The prosperity of the late 1700's and early 1800's was not really a product of more efficient farming methods. Instead, it was due to the economic boom that came with the Napoleonic Wars. Successful farmers began to improve their homes and to enlarge their farms.

In the past the great farm kitchen had been the center of the household. Here the family and the hired hands lived together, although they usually ate different food at separate tables. With prosperity, a separate sitting room, or even a best parlor for entertaining began to appear in many farmhouses. Furniture varied, but in addition to solid chairs, tables, benches, and stools made of oak, ash, or elm, many households had fancy linen chests and cupboards. Wealthier farmers had feather beds. Those who were not as well off slept on mattresses filled with straw or scraps of wool or cotton. Most households were well supplied with woven sheets and blankets.

Socially, perhaps the most interesting development within the farming community was the appearance of the "gentleman farmer." Because these farmers had rarely been born into the gentry class, it might be more accurate to describe them as farmers who were beginning to copy the way of life of the gentry. They came from the class of large landowners and were frequently pioneers in trying out new farming practices.

These new practices attracted the attention of other farmers, and of historians. Both the farmers of their time and the historians of a later time have praised them for their improved and experimental methods of agriculture. However, when their increasing prosperity tempted some large landowners from their traditional way of life, they were criticized by the gentry. Prosperous farmers made desirable tenants and were approved of by the landowning gentry. But when the farmers began to copy the manners and way of life of their "betters," the gentry frowned upon such airs.

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2. Forces of Change

The Industrial Revolution

How did the Industrial Revolution begin? What changes did it bring? The inventions that started the Industrial Revolution were rather simple machines. Yet they led to a revolution in the way goods were produced. For example, in the early 1700's the production of cotton cloth was a minor cottage industry. The introduction of new machines led to the building of factories and to tremendous growth in the cotton industry. These changes greatly affected the lives of people who produced cotton cloth. The new process of iron manufacture and the growth of railroads further changed the way of life of people in England.

In this section, people in the 1800's, as well as modern historians, give their views of the changes. And they compare life in England before and after industrialization.

WHY THE INDUSTRIAL REVOLUTION BEGAN IN GREAT BRITAIN

7. The Ingredients of Industrialization

Why was there an Industrial Revolution? Why did it begin in Great Britain and not somewhere else? Many historians have tried to answer these questions. In considering the answers, it is important to look at economic and political life in Great Britain in the late 1700's. Then we can compare conditions in Great Britain with those in other prosperous European nations at that time, particularly France, an important rival. In the following selection, a British historian, Charles Breunig, analyzes the reasons for Great Britain's headstart.

What special conditions that encouraged industrialization existed in Great Britain? How did the changes in agriculture affect Great Britain's industrialization?

conditions, taken together, help explain Great Britain's lead.

New Methods of Agriculture. The beginning of the Industrial Revolution was closely related to the changes in methods of farming and animal breeding which took place in England during the 1700's. Taken together these changes formed a revolution in agriculture.

The changes occurred at about the same time as the landowners in Parliament became politically secure [after Parliament had taken away much of the king's power during the 1600's]. The landowners then tried to use their new power to increase the income from their farms. However, their efforts were hampered by the old agricultural system of open fields, common lands, and cooperative methods of farming that they had inherited from earlier times. They were looking for new and more efficient ways to cultivate land and breed stock. In order for their agricultural experiments to be successful, they needed large enclosed fields. So the landowners tried to speed up the process of fencing in, or enclosing, their land by having the Acts of Enclosure passed. Since these acts were unopposed in Parliament, large areas came under more efficient farming methods.

The landowners did achieve a greater yield of crops and livestock from their farms. The enclosures brought about a significant increase in food production. British farms could now support a larger population with the work of fewer individuals.

□ Why did the Industrial Revolution begin in Great Britain? What special features of British society and economy explain its headstart over other nations? There is no single answer. A number of

New Markets. Two additional requirements for an industrial revolution are enough sources of the raw materials needed for the manufacturing process, and markets for the finished goods. Here, too, Great Britain had several advantages. It had a long-established fleet of commercial ships and a large and growing empire.

By the mid-1700's, Great Britain gained more territory in North America when it won a series of wars fought with France—its closest rival for an overseas empire. Great Britain's final triumph came with its defeat of France in 1814. Great Britain had a wealthy class of merchants ready to ship finished goods and raw materials, and a supply of possible customers and markets for the products of its industries.

Ready Money. One more condition for industrialization is money available for investment in the development of machinery and the construction of factories. Great Britain had a banking system and the means to lend money that were better developed and more flexible than those in the rest of Europe. Finally, wealthy merchants and landowners were willing to put up the funds to finance new industrial projects.

(Adapted from *The Age of Revolution and Reaction, 1789–1850* by Charles Breunig. Copyright © 1970 by W. W. Norton & Company, Inc. Reprinted by permission of the publisher, and Weidenfeld & Nicolson Ltd.)

8. Politics and Profit

By the late 1700's the economic, political, and social conditions in Great Britain were well suited to the development of industry. Other European countries may have possessed certain technological advantages. But in Great Britain, a special relationship existed between politics and profit making that made it the first industrial nation in the world.

In this reading E. J. Hobsbawm, a modern historian, discusses the scientific advances of the time and British politics and economics. What were some French and German scientific contributions? What was the highest goal of government in Great Britain? How did this goal encourage industrialization?

☐ By any measure, the Industrial Revolution was probably the most important event in world history. It was certainly the most important event since the

invention of agriculture and cities in prehistoric times. And Great Britain started it. This was not an accident. If there was going to be a race for beginning the Industrial Revolution in the 1700's, Great Britain was really the only starter. Even before the Industrial Revolution, Great Britain produced more goods per person than any other country.

Whatever Great Britain's lead was due to, it was *not* due to its having better scientists. The French were certainly better than the British in the natural sciences, such as mathematics and physics. The French Revolution increased this lead by encouraging the study of science in France. However, in Great Britain there was a reaction against the French Revolution which discouraged the study of the natural sciences.

The French also produced more original inventions. One example was a loom that made patterned cloth. This loom was a more complicated piece of machinery than anything invented in Great Britain. The French also built better ships. Both the Germans and the French possessed better technical schools.

The Industrial Revolution needed few great intellectual achievements. Its technical inventions were very simple. The flying shuttle, the spinning jenny, and the mule were inventions that intelligent mechanics were able to invent while experimenting in their workshops. And these inventions were simple enough for carpenters and locksmiths to build. James Watt's steam engine was the most scientifically advanced machine of the Industrial Revolution. Still, Watt used the principles of physics that had been available for the previous hundred years. Under the right conditions, the inventions of the Industrial Revolution practically made themselves.

And the right conditions were present in Great Britain. More than a hundred years had passed since Charles I had been tried and executed by the British people in 1649. After that event, private profit and economic development became the highest goals of government policy.

A few profit-minded landowners already controlled most of the farmland. Agriculture was able to perform the three basic functions that are important to industrialization. First, British farmers produced more food—enough to feed the growing population of the cities. Second, the new methods of farming provided a growing supply of workers for industry. Finally, the new farming methods made it possible for many farmers to make a profit. They could then invest some of these profits into the new industries.

Politics served to increase profits. On the whole, money not only talked, but governed. An industrialist could become a leader in politics and government by just having enough money. The highest law of the age was to buy in the cheapest market and to sell in the most expensive.

By the late 1700's, England possessed the basic social ingredients of an industrial society. [People could advance politically and socially if they were successful in business.] But, for England to become fully industrialized, it still needed two more things. First, it needed an industry [such as the cotton industry] that could reward manufacturers with high profits if they could produce more goods quickly by adding cheap and simple inventions. Second, it needed a world market dominated by a single producing nation.

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THE GROWTH OF THE COTTON INDUSTRY

9. James Hargreaves and the Spinning Jenny

The cotton industry was the first industry in Great Britain to be affected by the new inventions which began the Industrial Revolution. These inventions brought many changes which some people opposed and others welcomed. When inventions such as Hargreaves's spinning jenny and Arkwright's water frame were introduced, for example, they met with fierce opposition from many groups in society. The following selection, written in the 1830's, discusses the opposition to Hargreaves's spinning jenny and the reasons for it.

How does the author view the jenny? What reasons does he give for people's resistance to it?

☐ With his excellent invention, the spinning jenny, Hargreaves and his family spun yarn for his loom. Although he was aware of the value of his invention, he did not apply for a patent. He kept the jenny secret for a time and used it only for his own busi-

ness. However, a machine of such value could not possibly be kept hidden for long. Soon it became the subject of rumor. The spinners, instead of admiring and thanking the jenny's inventor, protested fiercely that it would throw them out of work.

A mob broke into Hargreaves's house and destroyed his jenny. The persecution and danger he suffered was so great that he became a victim of the ignorance of the people and had to flee his native county [of Lancashire].

Hargreaves moved to Nottingham where he entered into partnership with Thomas James, a woodworker. James raised enough money to enable them to build a small spinning mill. There, using the jenny, they spun yarn for the stocking makers.

In 1770 Hargreaves took out a patent for the jenny. The patent was "for a method of making a wheel or engine of an entirely new construction never used before. Only one person will manage it in order to spin, draw, and twist cotton."

After obtaining his patent in 1770, Hargreaves found out that several of the Lancashire manufacturers were using the jenny. He warned them that he would start a court action against them. The manufacturers sent a delegate to Nottingham to offer Hargreaves £3,000 for permission to use the machine. At first he demanded £7,000 but then he held out for £4,000. The negotiations were broken off and the court action continued. Before the trial began, Mr. Hargreaves's attorney learned that before leaving Lancashire, his client had sold some jennies to obtain clothes for his children. Because of this true account, the attorney gave up the suit because he knew he would not be able to win the suit for Hargreaves.

Hargreaves and James continued their successful spinning business until Hargreaves died in 1778. In his will, he directed that the minister receive a fee of 21 shillings for preaching his funeral sermon. His widow received £100 from Mr. James for her husband's share in the business. It will be a comfort to the admirers of genius to find that this contributor to his country's greatness was able to live in comfort—though not in wealth—on the fruits of his invention.

Strangely, not only the working classes, but even the middle and upper classes, feared the new machines. They did not understand that usually an invention which improved manufacture and reduced costs also caused more demand for its products. Therefore it could provide work for more hands than it caused to be laid off.

Based on this misunderstanding, spinners rioted to prevent the use of the new invention. The middle

and upper classes were alarmed that there would be more unemployed workers to share the taxes that they had to pay to aid the poor. They secretly cooperated with those who opposed the new machines. They did everything in their power to protect the people who were rioting against the new machinery.

This destructive outrage led to more permanent effects than usually come from such riots. The riots drove spinners and other manufacturers from Blackburn to Manchester and other places. It was many years before cotton spinning was resumed at Blackburn. Mr. Peel [the grandfather of Sir Robert Peel, who was Prime Minister in the 1840's] was a skillful and energetic spinner. In Altham, the mob threw his machinery into the river and he was in great personal danger. In disgust, he moved to Burton, in Staffordshire, where he built a cotton mill on the banks of the Trent River. There he remained for many years. A mob destroyed the large mill that Richard Arkwright had built in Birkacres while soldiers and police looked on. None of the civil authorities did anything to prevent this outrage.

(Adapted from *The History of the Cotton Manufacture* by Edward Baines, 1835.)

10. How the Power Loom Was Invented

In 1784, a minister named Edmund Cartwright began to experiment with ways to improve the weaving process. By 1787, he perfected his invention of the power loom. Using the power loom, an unskilled teenager could produce more cloth than several experienced handloom weavers. The power loom revolutionized the cotton industry and eventually helped destroy the handloom weavers' way of life.

In this reading, Cartwright describes how he came to invent the power loom, using the trial-and-error method of inventing. How did Cartwright happen to invent the power loom? Judging from his experience, what qualities did an inventor need?

□ When I was in Matlock during the summer of 1784, I met some gentlemen from Manchester. Our conversation turned to Arkwright's spinning machinery. One man observed that as soon as Ark-

wright's patent ran out, so many mills would be built and so much cotton would be spun that there could never be enough hands found to weave it. I replied to this observation that Arkwright should try to invent a weaving machine.

This led to a conversation on the subject of weaving machines. All the Manchester gentlemen agreed that it was impossible to invent a weaving machine. In defense of their opinion, they offered arguments which I certainly was unable to answer or even to understand since I was totally ignorant of the subject of weaving. At this time, I had never even seen a person weave. However, I argued against its being impossible. I remarked that recently a chess-playing robot had been exhibited in London. Said I: "Now, gentlemen, you will not insist that it is more difficult to construct a machine that weaves than to construct one that makes all the variety of moves which are required in the difficult game of chess."

A short time later, I was reminded of this conversation about weaving machines. It struck me that, according to my idea of the business of weaving, it could involve only three movements, each following one another. There would be little difficulty in producing and repeating them. Full of these ideas, I immediately hired a carpenter and a blacksmith to carry them out. As soon as the machine was finished, I got a weaver to put on the yarn. To my great delight, a piece of cloth (more or less) was the product.

I had never before turned my thoughts to anything mechanical, either in theory or practice. Nor had I ever seen a loom at work, or known anything about how it was built. You can easily imagine that my first loom must have been a most crude piece of machinery. It required the strength of two powerful men to work the machine slowly. And after only a short time, they would be exhausted.

In my ignorance, I believed that I had accomplished all that was required. I then secured a patent on April 4, 1785, for what I thought was a most valuable property. After this was done, I then graciously agreed to see how other people wove. You will guess my great surprise when I compared their easy methods of operation with mine. However, using all of what I then saw, I made a loom which was similar to the way they are now made. But it was not until the year 1787 that I completed my invention. I then took out my last weaving patent on August 1st of that year.

(Adapted from an account by Reverend Edmund Cartwright as quoted in *A Compendious History of the Cotton Manufacture* by Richard Guest, 1823.)

PEOPLE REACT TO THE FACTORY SYSTEM

11. Workers and Manufacturers

An important step toward industrialization was the setting up of factories. When the first factories were built in the 1770's, people did not want to work in them. Many workers, especially the handloom weavers, felt that factory work was degrading. Thus the owners were forced to hire from the least able groups in society, not from the independent artisans. Many weavers and spinners hated the new factory system and the changes it brought to their way of life.

The first reading below is a modern description of the early factory workers. The second selection is from an 1818 pamphlet condemning the new kind of manufacturers.

What were some of the objections to early factories? Who worked in the first factories? How did the factories affect the master spinners?

Workers in the Early Factories

□ The hardest task for the owners of the first mills was organizing the new factory industry. Craftspeople in cottage industries refused to leave their homes to go into the factories, because to do so would mean to lower themselves socially.

So factory workers had to be recruited from elsewhere. Only a very small proportion of them came from hand weaving. On the whole, they were recruited from rural workers and farmers. And finally, the new factory workers were recruited from children and from workers taken from orphanages and poorhouses. After the wars with France ended in 1814, the soldiers who were discharged from the British army came by the thousands to work in the factories.

Until the end of the 1700's the textile workers in the cottage industry system had no strong reason to go into the new factories. There was a widespread feeling that factory work was not respectable. Therefore, the early factory workers had to be recruited from the less steady and less responsible groups of society.

The records of that time supply proof for this idea. They show that displaced agricultural workers, discharged soldiers, failed tailors and shoemakers, paupers, and wanderers all tried their luck in the new factories. They left when they found the discipline annoying.

When the Deanston Mills were established in 1785, the owners found that the more respectable part of the surrounding inhabitants at first were against seeking employment in the mills. They considered it dishonorable to be employed in what they called "public work" in the factories (as distinct from domestic work in the home). Other early mill owners were faced with the same prejudice.

(Adapted from *The Rise of the Working Class* by Juergen Kuczynski. Reprinted by permission of McGraw-Hill Book Company and Weidenfeld & Nicolson Ltd.)

The New Breed of Manufacturers

□ With very few exceptions, the employers are people without education or manners who have sprung from the cottonshop. What little education they have they have gained from their contact with the small world of merchants on the cotton exchange at Manchester. But to balance that small amount of education, they have a vast amount of showy display—elegant mansions, horses, carriages, parks, and hunting hounds. Indeed, their houses are gorgeous palaces. While they are far larger than the neat charming homes you see around London, an observer will notice a sad lack of taste.

They bring up their families at the most expensive schools. They are determined to give their children a double portion of the education that they so lacked themselves. Thus, with hardly another idea in their heads except how to make money, they are absolute rulers in their own particular districts.

To support their grand style of living, their whole time is occupied in figuring out how to get the most work with the least expense to themselves. In short, there is a greater distance between the Manchester employer and his spinner than there is between the richest merchant in London and the lowest worker.

English spinner-slaves have no enjoyment of the open air and breezes of heaven. They are locked up in factories which are eight stories high and are allowed no relaxation until the heavy engines stop. Then they go home to refresh themselves for the next day. But there is no time for sweet conversation with the family since they, too, are exhausted.

When the industry of cotton spinning had just

begun—before those terrible machines called steam engines came into use and replaced human labor—there were many men called “little masters.” These little masters possessed a small amount of money to buy a few machines. They employed a few workers—about twenty or thirty men and boys. The little masters took cotton thread to the Manchester central market. There they gave it to the brokers who sold it to the merchants.

In this way, the master spinner could stay at home and supervise his workers. At home, the spinners’ wives received the raw cotton from the bale. The wives heated and cleaned the cotton to make it ready for the spinners to spin it into thread. They could earn eight, ten, or twelve shillings a week by doing this work. At the same time they could also cook and take care of their families.

But no one works like this now. A machine powered by a steam engine—called a “devil”—now breaks up the cotton. The spinners’ wives have no way to earn money except to work in a factory all day. They do the same work as children, making four or five shillings a week. At one time, if a man did not agree with his employer, he left him and could find work with another master.

But things changed in a few years when the steam engines came into use, and the little masters were the victims. A great deal of money was needed to buy steam engines and to build factories large enough to contain them. The engine power produced an article that was easier to sell, but not better, than the one the little masters could produce at the same price. In a short time, the little masters were ruined. And their ruin was a triumph for the overgrown manufacturers. The little masters were the only obstacle that had stood between the factory owners and their complete control of the workers.

Various disagreements arose between the workers and their new masters concerning the quality of their work. The worker was paid according to the number of yards of thread each produced. The manager of the factory had to approve the quality of the thread. He was an employee of the master, and so he took the master’s side and called the material coarser than it was. If the worker did not agree, he had to summon his employer in front of a judge. All of the acting judges of the district—except two worthy ministers—were people who came from the same background as the employer. The employers thought it beneath them to meet their servants in court. So they generally sent the manager to answer any summons to court. The judge usually decided in favor of the master, basing the decision on the statement of the

manager alone. The workers could not appeal the decision because of the great expense of going to court.

These evils to the workers have arisen from a dreadful monopoly. This monopoly exists in those districts where wealth and power are in the hands of a few factory owners. In the pride of their hearts these people think that they are the lords of the universe.

(Adapted from “A Journeyman Cotton Spinner,” from *The Black Dwarf*, September 30, 1818.)

12. The Old Ways Yield to the New in Lancashire

Over the years, more and more people were willing to work in the factories. Lancashire, the center of the cotton industry, changed greatly as the industry grew. The following selection, from a book written in the 1820’s, describes some of the gains and losses to the people of Lancashire resulting from increased industrialization.

According to the author, what were the positive effects of industrialization? How had life in Lancashire changed?

□ Before cotton manufacturing began in Lancashire, most of the people worked at farming. In earlier days the Squire, who owned most of the land, was the leader of the neighborhood. The people regarded his home, or the Hall as it was called, as a palace. The Squire was the ruler of opinion, the director of parish affairs, and the judge of all arguments.

On holidays, the commonfolk were invited to the Hall. There they wrestled, ran races, played at ring-toss, and ate and drank. An invitation to the Hall was proof of good character. It was a disgrace not to be invited along with the neighbors, since everyone was invited unless he or she had been guilty of improper conduct.

The parish minister had almost as much influence as the Squire. His sacred character and his learning gave him great authority. He never met the leaders of his congregation without asking the kindest questions about their families. Young and old sought his praise and feared his disapproval.

Neglecting or refusing to pay a fair debt was hardly ever heard of. People went to church twice on Sundays, and strictly observed the holy days. Every Sunday evening there was a reading of the

Scriptures at which the youngsters were always present in their best clothes.

These were unchanging established customs. The events of the neighborhood flowed in a regular, unbroken chain. Hardly anyone spoke of politics. The histories of each other's families—including cousins five times removed—marriages, births, and deaths formed almost the only subjects of their conversation.

Farmers were content to use the old methods of farming and management practiced by their ancestors for generations. They viewed improvements with dislike and scorn. There was little change in prices and little competition among individuals.

The farmers' minds shrank from the general lack of activity and interest, and because they were so rarely challenged. For the most part, farmers worked alone, and spoke with few people except their families. Thus, their understanding of things was dulled by lack of contact with different people and by an absence of an exchange of ideas. The market day of the village and attendance at church on Sunday were their greatest changes of scene. The favorite joys of their lives were to sit in each other's houses, to sun themselves in the marketplace, or to talk over news at that great trading center of gossip, the blacksmith shop.

The developing cotton industry introduced great changes into the manners and habits of these people. Since great numbers of workers were thrown together, their minds began to sharpen and improve from the constant communication with others. Conversation wandered over a variety of new topics that had never been tried before. Questions of peace and war became important interests because they might produce a rise or fall in wages. This led to the discussion of politics and the quality of their government and the people who ran it. They took a greater interest in the defeats and victories of their country's armies. Once they had been a little above their cattle in the intelligence scale; they now became intelligent political citizens.

The weavers changed their employers frequently. They were constantly trying to find and obtain the highest wages for their labor. The higher wages and skillful workmanship were incentives to create even better products. The weavers were convinced that they were self-sufficient. All this produced a spirit of freedom and independence. It also produced in them a respect for character, a sense of self-worth, and improved manners.

The games and hobbies of the people have changed with their character. Athletic exercises such as ring-toss, wrestling, football, and archery

are almost forgotten. It is to be regretted that the present hobbies and pleasures of the laboring class are so tame. They now raise and feed pigeons, breed canaries, and grow tulips.

(Adapted from *A Compendious History of the Cotton Manufacture* by Richard Guest, 1823.)

THE TROUBLES OF THE HANDLOOM WEAVERS

13. The Golden Age of the Handloom Weavers

The experiences of the handloom weavers provide an example of how industrialization deeply affected the lives of skilled workers. During the 1780's and 1790's, the cotton industry expanded rapidly, and the weavers prospered. Their labor was in great demand. In fact, the 1790's have been called "The Golden Age of the Handloom Weavers." However, as the power loom became more popular, handloom weavers gradually lost their livelihood. The author of the following selection, writing in 1828, describes them at the peak of their prosperity in about 1800.

Describe the weavers' quality of life. How did they spend their money?

☐ The handloom weavers' labor was in great demand. Therefore, it commanded a high price. Because of this, the weavers might be truly said to have gained in "wealth, peace, and religion." Their houses and small gardens were clean and neat. All the family was well dressed. Each man had a watch in his pocket and the women were dressed to their own liking. Every Sunday the church was overcrowded.

The houses were well furnished with clocks in elegant mahogany or fancy cases. There were handsome china tea services with silver or silver-plated sugar-tongs and spoons. Chinaware and pottery were displayed wherever there was a corner cupboard or shelf.

Many cottage families had a cow and paid for the summer's grass to graze her. And they kept a small plot of land in some field or corner, which they used as a meadow for hay in the winter.

(Adapted from *Origins of Power Loom Weaving* by William Radcliffe, 1828.)



Cottager family carrying belongings to a pawnshop.

14. Hard Times for the Handloom Weavers

By the 1820's the wages of the handloom weavers dropped to a fraction of their wages in 1800. In 1834, a special parliamentary committee was organized to hear the complaints of the weavers. The following reading is from one witness's testimony given to the committee. This witness tells of the poverty of the handloom weavers and the changes in their family life.

How had the weavers' way of life changed since their "Golden Age" around 1800? What reason is given for the weavers' troubles?

COMMITTEE: Do the weavers attend church as much as they did before?

WITNESS: To a great degree they have lost heart ever since their condition has become worse. And because they are not dressed as finely as other tradespeople, they generally stay at home. Or else they hide from the others by taking walks in the country to keep out of sight.

COMMITTEE: Do they educate their children and watch over their conduct as they did before?

WITNESS: It is a very natural thing for parents to educate and supervise their children. However, the weavers neglect their children's education due to lack of money. They have lost their influence over their children's conduct—especially by the time the children have grown up. In general the parents have much less influence over them than before.

COMMITTEE: When did this change begin in the

condition of the weavers and in the influence they have over their families?

WITNESS: To answer that question properly, I must say that in earlier times a weaver's family was under his own roof until they were pretty well grown up. During that time the weaver himself provided for them and had control over them.

Now in many weaver's families, the children have gone to steam-loom factories and other public works. In these factories, they are able to make double the earnings of their father. The children believe they may throw off their parents' authority before they are mature or are able to make decisions. They threaten to leave the house and take up other lodgings, believing that they are able to take care of themselves.

COMMITTEE: With your understanding of the cotton industry, can you explain what led to the low prices and the reduced condition of the weavers?

WITNESS: We have paid particular attention to that for many years. We think that the main cause of the suffering is the fierce unregulated competition among the manufacturers.

(Adapted from "Report from the Select Committee on the Handloom Weavers' Petition," *Parliamentary Papers*, 1834.)

15. The Weavers' Protest

The weavers reacted to their troubles in various ways. Sometimes they protested peacefully. At other times they used violence, burning down mills or rioting. Two examples of peaceful protest methods used by the weavers are presented here. The first reading is a petition in which journeymen weavers protested their working conditions. Journeymen weavers did not own their own looms, but wove on looms belonging to others. The second example is a song about a poor weaver which was popular in Manchester in the early 1800's.

What were the weavers protesting? What solutions did they propose? How did they describe the changes in their way of life?

A Petition from the Weavers

□ During the years 1802 and 1803 the wages of a journeyman weaver amounted to 15 shillings, 9 pence per week. This was pretty near the same wage as that of other skilled workers and we maintained our rank in society. We will now contrast our

present situation with the past. It will demonstrate clearly the disgraced state to which we have been reduced.

During the last two years our wages have been reduced to so low a level that for the greatest part of that time we have received no more than the shameful price of 4 shillings, 6 pence to 5 shillings per week. We appeal to your fairness and good sense whether such a tiny sum is sufficient to keep body and soul together. We have to buy our food from the same market and at the same price as other people who have been earning three times the money.

(Adapted from journeymen weavers' petition, 1818. H.O. 42.178, July 26, 1818.)

Lancashire Ballad

*I'm a poor cotton weaver, as many know
I've nothing to eat in the house and I've worn out
my clothes*

*You'd hardly give six-pence for all I've got on
My clogs are both broken and stockings I've none,
You'd think it was hard, to be sent into the world,
To waste with hunger—and do the best you can.*

*Our parish-church parson keeps telling us long
We'd see better times if we'd but hold our tongue
I'm holding my tongue till I can hardly draw breath
I think in my heart he means to have me suffer to
death*

*I know he lives well, by speaking against the devil
But he never worked the shuttle in his life. . . .*

*You gentlemen and tradesmen, that ride about at
will,*

*Look down on these poor people, it's enough to
make you chill*

*Look down on these poor people, as you ride up
and down*

*I think there is a God above will bring your pride
quite down. . . .*

*You go to church on Sunday, I know it's nothing
but pride,*

*There can be no religion where humanity's thrown
aside:*

*If that place called heaven, is like the Cotton
Exchange,*

*Our poor souls won't be allowed there, like lost
sheep they will range.*

(Adapted from old Lancashire song, "Jone O'Grinflint, Junior.")

THE DEVELOPMENT OF HEAVY INDUSTRY

16. Two Important Inventions and Their Effect on Industry

Phyllis Deane, a modern historian, considers the two most important inventions of the Industrial Revolution to be the steam engine and Cort's puddling and rolling process for the manufacture of iron. In the following reading, she explains the long-range effects of these inventions.

According to this historian, what effects did these two inventions have on British industry? What natural problems did these inventions solve?

□ If we were to try to single out the most important inventions of the Industrial Revolution, the choice would fall on the steam engine and on Cort's puddling process, which produced a cheap and acceptable iron. These inventions made the Industrial Revolution possible. They provided for economic growth by guaranteeing a constant process of industrialization and technical change.

Watt's steam engine was first built in 1775. It had a wide range of immediately practical uses. By powering water-pumping and hoisting machinery it made it possible to get cheap coal from deeper and deeper layers within the earth. When it ran the blast-furnace, it provided a blast strong enough to burn coke instead of charcoal. It provided for the constant operation of expensive blast-furnace equipment wherever coal and iron ore were available.

Industry no longer had to be dependent for power on a local water supply, available only in certain seasons of the year. The steam engine powered spinning and weaving factories, breweries, flour mills, and paper mills.

By 1810 these possibilities were already obvious. If Watt had not restricted the spread of his engine with a patent, these possibilities might have developed even faster. Later in the 1800's locomotives began using steam power. This made it possible to carry coal, iron, bricks, and other heavy raw materials or goods to any part of the country. Later still, when the steam engines powered iron

ships, they permitted the importation of cheap food from the New World.

The other important invention, Cort's puddling and rolling process, dates from the 1780's. It put the finishing touch to the series of inventions which were involved in the changeover from charcoal to coal in iron manufacture. It permitted industry to escape rapidly from dependence on the decreasing supplies of local wood, and expensive foreign bar-iron. The iron industry could now make use of the plentiful British resources of iron ore and coal. As in the case of steam power, an important barrier was broken.

But the long-term results were the most significant. Most manufacturers used iron to make their heavy goods. This had revolutionary results. Iron machinery was long-lasting. It could be run continuously with little wear. It could be molded into standard shapes which guaranteed more accurate results than did the eye of a skilled worker.

And above all it was cheap. The introduction of cheap iron marked the beginning of the machine age and of the engineering industry. Applied to steam-engine boilers, British iron was cheaper than copper and safer under high pressure than cast-iron. Applied to machine tools, it made precision work possible for the first time. This could be developed into many uses. Finally, applied to railways and ships, iron was a building material of extraordinarily high strength. With the aid of the steam engine, cheap iron revolutionized the transportation industry.

The important thing about both these inventions is that they introduced far-reaching technological changes into the industries producing products and machinery that helped to make other goods. It was this characteristic that gave them their tremendous importance in the process of industrialization.

(Adapted from *The First Industrial Revolution* by Phyllis Deane. Reprinted by permission of Cambridge University Press.)

17. Prospectus of the Liverpool and Manchester Railroad Company, 1824

During the late 1700's and early 1800's, British merchants used an extensive canal system to transport their goods from one region to another. This method of transportation was slow and expensive.

In the early 1800's the steam engine was applied to a new method of transportation, the railway. By the mid-1800's this new idea revolutionized transportation.

In 1824 the promoters of the Liverpool and Manchester Railroad Company wanted to raise money to build a railway line which would run between Liverpool and Manchester, linking a large port with England's largest cotton manufacturing city. The construction would cost £400,000. Therefore the promoters had to sell 4,000 shares in their railroad company at £100 each.

In order to persuade people to invest, they circulated a "prospectus" listing the benefits of a new railway. The Liverpool and Manchester railroad began operation in 1830.

What reasons do the promoters advance in favor of the railway? What were its advantages over the canals? How would the new railway benefit merchants? the people of Manchester and Liverpool?

□ We, the committee of the Liverpool and Manchester Railroad Company, think it right to state clearly the grounds upon which we ask for public encouragement and support.

The total amount of goods passing between Liverpool and Manchester is estimated to be at least a thousand tons per day. Most of these goods are carried through either the Duke of Bridgewater's Canal, or another waterway, the Mersey and Irwell Navigation.

By both of these means of transportation, goods have to travel sixteen or eighteen miles (26 or 29 kilometers) up the River Mersey. They are subject to serious delays from unfavorable winds in stormy weather, and there is often actual loss or damage. The average length of passage is thirty-six hours—including the usual wait at the wharfs.

For the last fourteen years, the average charge for shipping merchandise has been about fifteen shillings per ton. It is not that the water companies are not able to carry goods at more reasonable rates. They have not found it necessary to lower their rates because they have enjoyed a monopoly on the transport of goods. IT IS COMPETITION THAT IS NEEDED.

The public can look forward to two strong direct advantages from the proposed railroad. The first

is the greater ease of trade and transportation which will come from the prompt and speedy transport of goods between Liverpool and Manchester. The second advantage is the great savings of money to the business community.

The residents of these large towns will have their full share of direct and instant benefits. There will be more coal brought to market, and at a lower price. Various kinds of farm crops will find their way from greater distances at more reasonable prices. Also, the railroad offers important advantages to the landowners near the rail line. It offers a wider market for their agricultural produce as well as an easy means of obtaining fertilizers, such as lime and manure, at a cheaper rate.

Moreover, it is very likely that the railroad will be a cheap and easy means of travel for the general public. We cannot now even guess the full importance and influence of these advantages to the people of this region.

(Adapted from *History of the Commerce and Town of Liverpool* by Thomas Baines, 1852.)

18. Early Railways

How did people react to the new railways? Often the new locomotives sped along at 35 miles (56 kilometers) per hour, an amazing speed for that time. Fanny Kemble, an actress and author, rode on one of the first railways. She was among the early travelers who wrote of their impressions. Not everyone was enchanted with the railway. Early trains were sooty and dangerous, and raised other objections as well, as you will read in the second selection below.

How does Fanny Kemble describe railway travel? What were some of the early objections to the railways? Why would some people try to stop the building of new railways?

An Impression of Train Travel

□ You can't imagine how strange it was to be traveling like this. There was no visible cause of our movement other than the magical machine. The flying white breath of the machine with its rhythmical steady pace made its progress between

these rocky walls which are already clothed with moss, and ferns, and grasses. When I reflected that these great masses of stone had been cut apart to allow our passage so far below the surface of the earth, I felt no fairy tale was ever half so wonderful as what I saw. Bridges straddled the sides across the top of these cliffs. The people looking down upon us from them seemed like miniatures standing in the sky.

The engine was set off at its top speed of thirty-five miles (56 kilometers) per hour—swifter than a bird flies, for they tried the experiment with one. You cannot imagine the sensation. It was like cutting through the air. The motion was as smooth as possible, too. I could either have read or written as I rode. As it was, I stood up, and with my bonnet off breathed in the air before me. The wind which was strong—or perhaps the thrust of the train's motion against it—absolutely weighed my eyelids down. When I closed my eyes, this sensation of flying was quite delightful and strange beyond description. Yet strange as it was, I had a perfect sense of security, and not the slightest fear.

(Adapted from the writings of Fanny Kemble in *The Age of the Railway* by Harold Perkin.)

Objections to the New Trains

□ A leaflet, *Rules for Railway Travelling*, gives some amusing advice: "If sometimes it happens that a second class carriage has no door, passengers should take care not to put out their legs." "Beware of yielding to the sudden impulse to spring from the carriage to recover your hat which has blown off, or a parcel that has dropped."

At first some of the older and more wealthy towns petitioned Parliament to keep the "new-fangled notion" outside their boundaries. Other people asked what would become of coach-makers, harness-makers, coach-masters and coachmen, inn-keepers, horse-breeders, and horse-dealers if the railways were allowed to take the place of travel by coach. Many landowners tried to prevent the railway routes from going through their estates. When the landowners were forced to sell the land to the railway companies, they made the railways pay very high prices.

(Adapted from *The Making of Modern Britain* by T. K. Derry and T. L. Jarman: New York University Press, 1956. Reprinted by permission of John Murray.)

3. Costs and Benefits

Effects of Industrialization

Have we paid too high a price for the benefits of industrialization? Or have the benefits outweighed the costs? For example, people have argued over such questions as whether industrialization led to cruel child labor practices and if it worsened living conditions in the cities. The debate began in England, where industrialization started, and continues to this day.

Industrialization brought an increased awareness of social problems. Many new political and social movements aimed at solving these problems gained followers during the Industrial Revolution. The readings in this section represent the views of writers, politicians, reformers, and modern historians.

THE PROBLEMS OF THE CITIES

19. Urban Living Conditions

The great centers of the Industrial Revolution—such as Manchester, Liverpool, and Leeds—had once been small trading towns. These towns grew rapidly when people flocked to work in the new textile factories. This sudden growth was unexpected and, therefore, unplanned. For some observers, these industrial cities became the symbol of the evils of the Industrial Revolution.

As hard as life was for many people in the cities, there were others who thought that city life had improved since the 1700's.

The two following selections are by Friedrich Engels and Francis Place, observers who represent these opposing views. Engels describes a Manchester slum in the 1840's. Place discusses the decline in the death rate in London.

From what you have read, how would you compare the conditions in those cities where the Industrial Revolution began to the living conditions in London in the 1700's?

A Manchester Slum

□ The area is full of ruined or half-ruined buildings. Some of them are actually deserted. In the houses, one rarely sees a wooden or stone floor. The windows are nearly always broken and badly fitted. And the dirt! Everywhere one sees piles of garbage and filth. There are foul pools instead of gutters. The stink is so strong that no one even partially civilized could bear to live there.

A new extension of the railway crosses the river near this part of the city. It has swept away some of these courtyards and alleys. But some of the other areas are now more visible. So, it happens that right under the railway bridge one can see a courtyard which is even filthier and more revolting than all the others. Before, it was so hidden that no one could get to it, but now it is fully exposed to public view. I thought I knew this area well. But even I would never have found it, if the railway bridge had not cut through the slums at this point.

I walked to the river along a very rough path which passed between laundry lines. At the river bank, I reached a messy group of one-storied, one-room shacks. Most of them have dirt floors. Working, living, eating, and sleeping all take place in the one very small room. In this hole, I saw two beds—and what beds and bedding! They filled the entire room, except for the fireplace and doorstep.

(Several of these huts were completely empty of furniture, although I saw people living in them.) In front of the doors, there was filth and garbage everywhere. I could not see the pavement, but from time to time I felt it was there because my feet scraped it. This whole collection of cattle sheds for human beings was surrounded on two sides by houses and a factory, and on the third side by the river.

(Adapted from *The Condition of the Working Class in England* by Friedrich Engels, 1845.)

Better Conditions in London

□ Much of the decline in the London death rate between 1700 and 1821 is due to the increased healthfulness of the city. Also, much is due to changes in the habits of the working class that have taken place not only in London, but all over the country. The workers are much more moral and serious. They take better care of themselves and their homes than they did before. This is particularly true of the women. They have benefited from the increased knowledge of household care and the care of children. Although there is still plenty of immorality, misery, and disease in London, these conditions are not as widespread as before.

(Adapted from remarks by Francis Place, 1819, in *London Life in the Eighteenth Century* by M. Dorothy George.)

20. The Cities in Literature

English literature of the 1800's contains many descriptions of London and the industrial cities of Lancashire. The following two poems—by Lord Byron and William Wordsworth—provide different views of London. In the third selection, from *Hard Times* (1854), Charles Dickens describes a fictional city, Coketown, which he based on his observations of the new manufacturing cities.

How does each writer view the cities? According to Dickens, what was a worker's life like in the industrial cities?

From Don Juan

*A mighty mass of brick and smoke and shipping,
Dirty and dusky but as wide as eye
Could reach, with here and there a sail just skipping
In sight, then lost amidst the forestry
Of masts; a wilderness of steeples peeping
On tiptoe through their sea-coal canopy;
A huge dun¹ cupola² like a foolscap³ crown
On a fool's head—and that is London Town!*

(From *Don Juan*, Canto X, by Lord Byron, 1823.)

¹ Dun: brown. ² Cupola: dome. ³ Foolscap: dunce cap.

View of the industrial city of Manchester from the surrounding countryside, 1850's.



Upon Westminster Bridge, September 3, 1802

*Earth has not anything to show more fair:
Dull would he be of soul who could pass by
A sight so touching in its majesty:
This City now doth, like a garment, wear
The beauty of the morning; silent, bare,
Ships, towers, domes, theaters, and temples lie
Open unto the fields, and to the sky;
All bright and glittering in the smokeless air.
Never did sun more beautifully steep¹
In his first splendor, valley, rock, or hill;
Ne'er saw I, never felt, a calm so deep!
The river glideth at his own sweet will:
Dear God! the very houses seem asleep;
And all that mighty heart is lying still!*

("Upon Westminster Bridge, September 3, 1802" by William Wordsworth.)

¹ Steep: bathe.

Coketown

□ It was a town of red brick, or of brick that would have been red if the smoke and ashes had allowed it. It was a town of machinery and tall chimneys. Out of these chimneys unending serpents of smoke trailed themselves forever and ever, and never got uncoiled.

It had a black canal in it, and a river that ran purple with ill-smelling dye. There were vast piles of buildings full of windows where there was a rattling and a trembling all day long. In these buildings the piston of the steam engine worked monotonously up and down, like the head of an elephant in a state of gloomy madness.

It contained several large streets, all very like one another, inhabited by people equally like one another. The people all went in and out at the same hours, with the same sound upon the same pavements, to do the same work. And to them every day was the same as yesterday and tomorrow, and every year the copy of the last and the next.

These features of Coketown were an inseparable part of the work that was done there. And this work was essential to keeping the city alive. In contrast to the ugliness of Coketown, the products of its factories made life elegant and comfortable for people all over the world. The fine lady who enjoyed this elegance and comfort could not bear to hear the name "Coketown" mentioned.

(Adapted from *Hard Times* by Charles Dickens, 1854.)

CHILDREN AND THE INDUSTRIAL REVOLUTION

21. The Debate Over Child Labor

Many people were concerned about the hardships that children suffered in the factories and mines of the Industrial Revolution. Others believed that as hard as life was in the factories, the children who worked in them were much better off than in the days before industrialization.

Parliament organized special commissions to investigate these working conditions. As a result of their investigations, Parliament eventually passed laws regulating child labor.

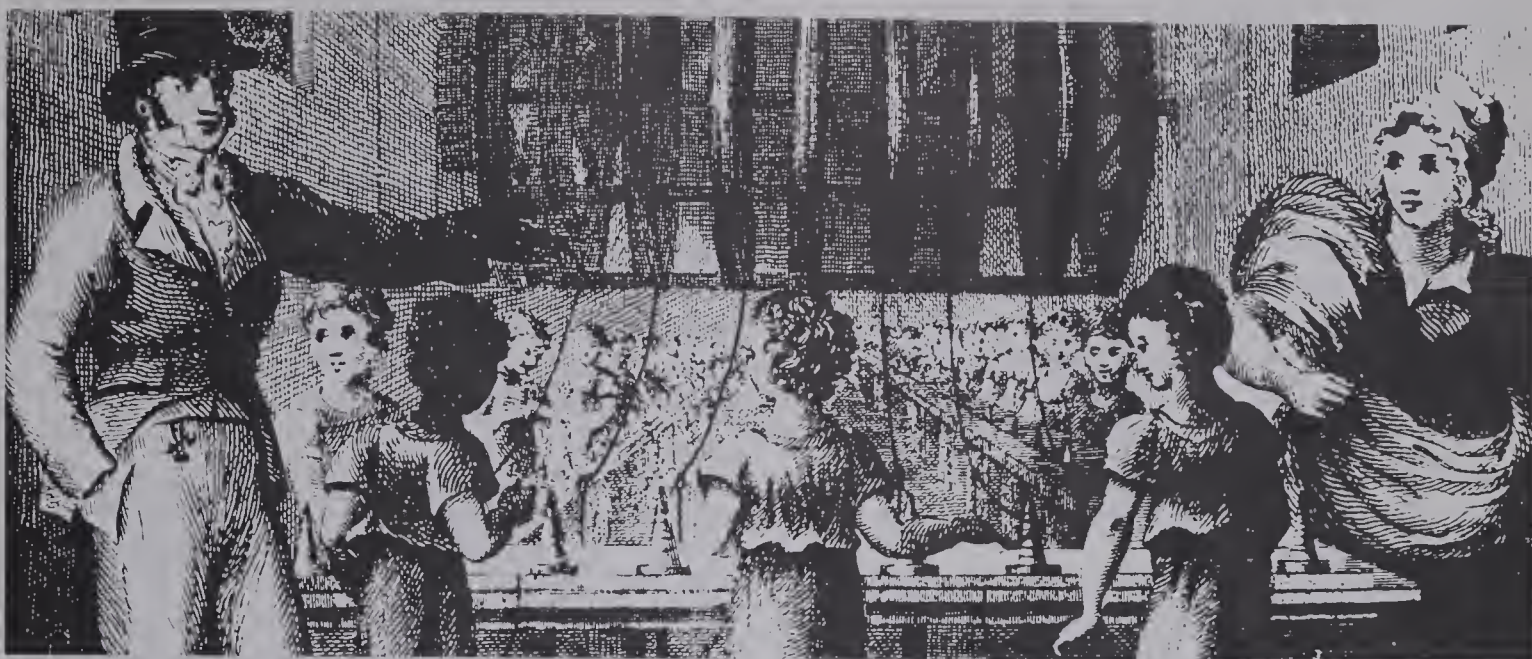
In the first reading an old man expresses his feelings about his own childhood in the cottage system. The second reading is from Richard Oastler's testimony before the Sadler Commission, a parliamentary commission which was set up in 1832. Richard Oastler was a reformer who was interested in the passage of legislation to ease children's burdens in the factories. Eventually, Oastler succeeded in having Parliament pass the Ten Hours' Act, shortening the working day for women and children.

According to Oastler's testimony, how did factory work affect the children? How did it affect family life? How does each speaker describe child labor under the cottage system?

Infant Slavery

□ My excellent host persuaded me to visit some of those elderly people who may be called the philosophers of the workers. Our first visit was to one of the oldest people in the village—a man over eighty years old. He had been a weaver, and he remembered the condition of the weaving trade before the introduction of machinery. According to his account, those were really the days of infant slavery. He said, "The children were set to work as soon as they could crawl. Their parents were the hardest taskmasters."

I may remark that on a previous occasion I received a similar account from another old man. He



Children spinning yarn in a cotton mill, 1820.

declared that he would not accept an offer to live his whole life over again if he had to pass through the same slavery and misery that he endured when he was a child.

(Adapted from *Notes of a Tour in the Manufacturing District of Lancashire* by W. Cooke Taylor, 1842.)

Richard Oastler's Testimony

□ When I was a boy in Yorkshire, it was the custom for the children to mix learning their trades with other instruction and amusement. The children did not learn by being put into jobs where they stayed from morning to night. Instead, they learned their trades or occupations by having a little work to do with some time for instruction.

And they were under the direct care of their parents. Respectable clothiers occupied the villages around Leeds and Huddersfield. These clothiers could produce a piece of cloth or two in a week, and they kept their family at home. At that time they could make a good living from what they sold. There was love and respect between parent and child, and people were not overworked.

But that group of manufacturers has been almost completely destroyed. There are hardly any of the old-fashioned cottage manufacturers left. The villages now contain one or two, or at most four, mill owners. The rest of the villagers are poor creatures who are reduced and ground down by poverty.

They are forced to live upon the labor of their little ones. In most cases the little children in these manufacturing villages are barely acquainted with their parents. In the very early morning, sometimes at five o'clock, and very often before four, they are awakened by their father. They are pulled out of bed when they are still almost asleep. Older children carry the younger ones—still sleeping—on their backs to the mill. In general, the children see no more of their parents until they go home at night. Then their parents send them to bed.

Now that kind of system must necessarily prevent the growth of affection between parents and children. It destroys the happiness of the cottage family. It prevents both parents and children from caring for each other in the way that God designed that they should. I have heard many of these fathers declare that it is painful for them to think that their little children endure so many hardships to help support them.

These fathers hardly know how to bear their lives. I have heard many of them declare that they would much rather be transported out of the country than be forced to live this way. I have heard mothers say that they would rather that their lives were over than to live in such misery.

This system encourages crime. The little children—and also their parents—know that if they only commit a theft and break the laws, they will be arrested and put into the House of Correction. There they will not have to work more than six or seven hours a day.

(Adapted from *Parliamentary Papers*, 1831–1832. Vol. XV.)

22. The Apprenticeship System

Ever since the Middle Ages, young people had been trained to work through the apprenticeship system. Therefore, in evaluating child labor at the beginning of the Industrial Revolution, we might compare it with this earlier form of child labor.

An apprentice was a young person, usually about ten years old, who signed a contract with a master artisan. The master agreed to train the apprentice and provide room and board. In return, the apprentice agreed to serve as the master's assistant.

At its best, this system enabled a young person to learn a craft while the master was provided with an assistant. At its worst, the apprenticeship system produced cruel masters and irresponsible apprentices.

Under this system orphans suffered the most. If they survived the orphanages, they were apprenticed by the parishes to masters who were frequently neglectful or cruel.

The first reading describes the traditional apprenticeship system. The poem by William Blake presents a view of the life of the chimneysweeper. Reformers in the late 1700's pointed to chimneysweepers as an example of the cruelties of the apprenticeship system.

What were the advantages of the apprenticeship system? the disadvantages? In what ways did it differ from child labor in the factories? In what ways was it the same?

How the Apprenticeship System Worked

□ Before the Industrial Revolution, the only word used to describe a group who worked together was "family." The man at the head of the group—the employer or the manager—was known as the master or head of the family. He was the actual father of some of its members and acted as father to the rest. There was no sharp division between his functions as head of his real family and head of the work group. His wife was both his partner and his co-worker. She was a partner because she ran the family, taking charge of the food and managing the women-servants. She was also a co-worker because she was woman and wife, and real mother

and acting mother to the other members of the group. The paid servants had definite positions in the family group. They were part of the family, but not quite in the same position as the children.

At that time the family was not one society, but three societies joined together. There was the society of husband and wife, of parents and children, and of master and servant. When servants were young, and for the most part they were young unmarried people, they were very close to the children in rank and duties.

In a typical agreement between the parents of a boy about to become apprenticed to a trade and his future master, the boy agreed to live as an apprentice with his master for seven years. He agreed to keep his master's secrets and to obey his orders. The apprentice agreed that "he shall not haunt taverns and alehouses. He shall not play at dice, cards, or any other unlawful games. He shall not marry. He shall not leave the house by day or night without his master's permission. He must be a true and faithful servant."

The master in turn agreed to teach his apprentice his "art, science, or occupation." He agreed to provide his servant with "meat, drink, clothing, washing, and lodging and all other things during the said term of seven years." He also agreed to give to his apprentice at the end of his term one suit of clothes for holidays and one suit for working days.

Apprentices were unpaid and were absolutely dependent upon their master until the age of twenty-one. (At that time, people could expect to live for only thirty years in all. How must they have felt when they realized that so much of their adult life—perhaps all—must be spent in working for room and board in someone else's family?)

While apprentices were workers in the position of sons and daughters, the sons and daughters of the house were workers too. In 1697 the philosopher and political scientist John Locke wrote that the children of the poor must work for some part of the day when they reached the age of three. The sons and daughters of a London baker were not free to go to school for many years of their young lives. They were not even free to play as they wished when they came back home. Soon they would find themselves sifting flour or helping the servant with the loaves of bread on the way to the market stall. Or they would play their small parts in preparing the never-ending series of meals for the whole household.

(Adapted from *The World We Have Lost* by Peter Laslett. Copyright © 1965 Peter Laslett. Reprinted by permission of Charles Scribner's Sons and Associated Book Publishers Ltd.)

From The Chimney Sweeper

*When my mother died I was very young,
And my father sold me while yet my tongue
Could scarcely cry "'weep! 'weep! 'weep! 'weep!'"
So your chimneys I sweep, and in soot I sleep.*

*There's little Tom Dacre, who cried when his head,
That curled like a lamb's back was shaved: so I said,
"Hush, Tom! never mind it, for when your head's
bare
You know that the soot cannot spoil your white
hair."*

*And so he was quiet, and that very night,
As Tom was a-sleeping, he had such a sight!
That thousands of sweepers, Dick, Joe, Ned, and
Jack,
Were all of them locked up in coffins of black.*

*And by came an Angel who had a bright key,
And he opened the coffins and set them all free;
Then down a green plain leaping, laughing, they
run,
And wash in a river, and shine in the Sun.*

*Then naked and white, all their bags left behind,
They rise upon clouds, and sport in the wind;
And the Angel told Tom, if he'd be a good boy,
He'd have God for his father, and never want¹
joy.*

"The Chimney Sweeper" from *Songs of Innocence* by William Blake, 1789.)

¹ Want: lack.

THE SPIRIT OF REFORM

23. Violent Reformers – The Luddites

Industrialization led to tremendous change in English society, transforming the lives of many different groups. As we have seen, the factory system destroyed the livelihood of the handloom weavers. As a result, a group of them, known as Luddites, attacked the steam-loom factories between the years 1811 and 1826. This was their violent—and in the end useless—way of reacting to the destruction of their way of life.

In 1811, one group of Luddites began breaking the weaving machines which belonged to merchants. Following are a Luddite protest song, and a handbill calling for the capture of the Luddites.

What reasons did the Luddites give for their violence? When did they promise to end the violence? According to the handbill, what crimes committed by the Luddites were punishable by death? What crimes were punished with a prison term?

Luddite Song

*The guilty may fear, but no punishment's aimed
At the honest man's life or his land,
The awful machines are the ones that we blame
And the wages now too low for man.
These engines of mischief were sentenced to die
When all of the workers agreed
That Ludd, who can all opposition defy
The grand Executioner be.*

*And when in the work of destruction employed
To succeed there's no method he bans;
By fire and by water he gets them destroyed
For the elements aid in his plans.
Whether guarded by soldiers along the highway
or closely locked up in the room,
He breaks them up both by night and by day,
And nothing can soften their doom.*

*People may criticize Ludd's disrespect for the
Laws*

*If they ne'er for a moment reflect,
What awful oppression alone was the cause
Which produced these unhappy effects.
If the rich no longer oppress the poor
Then shall Ludd stop his attack,
His complaints if quickly heard will be no more,
and we shall restore the peace we lack.*

*Let the wise and the great lend their aid and their
worth*

*Nor e'er their assistance withdraw
Till the old higher wage and the proper-made cloth
Are established by Custom and Law.
The workers shall rejoice when this contest is won
And with dignity and pride it can be said,
That cutting and processing cloth no more shall
Deprive honest workers of bread.*

(Adapted from "General Ludd's Triumph" in *The Luddites* by Douglas Liversidge. Franklin Watts, 1972.)

County of Leicester

The Magistrates for this County

CAUTION

All Persons Against The Crime of Frame Breaking

Every person forcing entry into a house in the night, IN ORDER TO BREAK A FRAME, and every person IN ANY MANNER aiding or assisting others in doing this deed, is guilty of BURGLARY. This crime is punished by DEATH.

Persons who use their employers' frames and who in any way cooperate in their destruction are PARTNERS IN SERIOUS CRIME. HIDING THE NAMES OF FRAME BREAKERS, in order to screen them from justice, is punished by FINE AND IMPRISONMENT.

Persons COLLECTING MONEY BY FORCE OR THREATS for the support of frame breakers, ARE CRIMINALS. They will be punished with DEATH.

Persons USING THREATENING LANGUAGE concerning the personal safety or property of others, risk a prison term. In order to be released from a prison term, they must find individuals who will GUARANTEE their future good behavior.

And the magistrates call upon all good and loyal subjects of the King to be ALERT. They must give the police of their parishes the EARLIEST NOTICE of all such criminal ACTS or THREATS. In this way, the offenders may be arrested and dealt with, according to law.

By order of the Magistrates,

CHARLES LACEY, their Clerk.

Loughborough, December 10, 1811.

(Adapted from a handbill for the arrest of the Luddites. 1810, in *The Luddites* by Douglas Liversidge. Franklin Watts, 1972.)

24. Reformers and Chartists

Some workers felt that the violent economic protest of the Luddites was useless. They preferred to work for reform through laws passed by Parliament. One of the goals of these reformers was to obtain suffrage, or the right to vote. They felt that if they became voters, they could elect a Parliament which would make laws to improve their working conditions. Parliament passed a Reform Bill in 1832 which extended the right to vote to the middle class, a group which had grown tremendously with the advance of industrialization. The Reform Bill lowered property requirements for voting. This increased the power of the middle class by granting more representation to fast-growing manufacturing districts such as Manchester.

The workers formed the Chartist movement, whose aim was to get the vote for all adult males. (The vote for women was not an important issue at that time.) The following readings describe the spirit of Parliamentary reform and some early Chartist attempts to gain the vote. The first is by William Cobbett, a writer and reformer. The second is from the first Chartist petition addressed to Parliament in 1838. The final selection is a newspaper account of a Chartist rebellion in Wales in 1839. This rebellion occurred after the Chartists failed to achieve their goal of universal male suffrage.

According to Cobbett, what reforms did the workers need? What reforms did the Chartists ask for in their petition? What does the rebellion tell us about Chartist popular support?

Reform as the Answer

□ Will a reform of Parliament give the laborer a cow or a pig? Will it put bread and cheese onto his plate instead of hateful cold potatoes? Will it put upon his back a Sunday coat and send him to church? Or will it leave him to stand outside shivering, with an unshaven face and a body half covered by a ragged smock—with a filthy cotton shirt beneath it as yellow as a bird's foot? The enemies of reform mock us and ask us whether reform would do these things for us? And I answer distinctly that YES, IT WOULD DO THEM ALL!

(Adapted from *Political Register*, Vol. Lxxii, c. 4, by William Cobbett in *Industrial England 1776–1850* by Dorothy Marshall).

Chartists' Petition of 1838

□ We humbly come before you to tell you that this state of affairs in which the workers suffer must not be allowed to continue. It cannot continue without causing danger to the peace of the kingdom. If an end can be put to it, with God's help and by lawful means, we are determined that this will be done. While factory owners must be allowed to keep a fair share of the profit, the workers must be paid a living wage. The laws which make food expensive must be ended. The laws which make money scarce must be ended. Landowners must be taxed, not workers in industry. The government's only concern must be to help the majority of the people.

We perform the duties of free men. We must have the privileges of free men. Therefore, we demand that all men be given the right to vote. To prevent the rich and powerful from influencing the voting, secret ballots must be used.

The representatives and the people must have greater contact, with the people often consulted. Therefore, frequent elections are essential to the public safety, as well as to the public good. We demand that Parliamentary elections be held every year.

And our choice of representatives must not be limited. At the present time, we are forced to choose among men who do not understand or sympathize with our problems. The candidates are retired merchants who have forgotten the pressures of business, or landowners who know nothing about the problems of business or their solutions. Or they are lawyers whose only interest in Parliament is to become well-known in the courts.

A representative who faithfully does his duty must work long and hard. It is not reasonable, safe, or fair to expect him to work for no pay. We demand that in the future, money be set aside from taxes to pay representatives for the time they devote to public service.

May it therefore please the Parliament to consider our petition carefully. Please use your utmost effort to pass a law which gives every man the right to vote, if he is of lawful age, of sane mind, and not guilty of a crime. Enact a law which insures that all future elections will be held by secret ballot and that elections be held at least once a year. Put an end to all laws which require members of Parliament to be property owners. And please further direct that all representatives be paid during the sessions of Parliament.

(Adapted from an 1838 Chartist petition in *Major Crises in Western Civilization*, Vol. II, Richard W. Lyman and Lewis W. Spitz, editors.)

A Chartist Rebellion in 1839

□ The rioters planned to attack the town of Newport on Sunday afternoon. But it had rained so hard that many of them could not get to the scheduled meeting places in time. But on Monday they did enter the town, in two divisions armed with guns, pistols, swords, and heavy clubs. After entering the town, they asked where the soldiers were stationed. They were told that about thirty soldiers were stationed at the Westgate Hotel.

The mob formed in front of the hotel and immediately started an attack by firing through the windows into the hotel. The soldiers, led by the mayor of Newport, returned the fire. In a very short time, several rioters had been killed. Seeing the blood-stained bodies of their comrades, the other rioters retreated in great disorder. The mayor was wounded in his left arm and right side. Two soldiers and two shopkeepers were seriously wounded.

The mayor was cool and fearless throughout the incident. Among showers of bullets, he publicly read the act forbidding rioting before giving the order for the soldiers to fire. The number of rioters was estimated at between 7,000 and 10,000. A much larger number was gathered on the hills around the town.

At night, the house of the riot leader was searched and the leader was arrested. When the mayor arrived to arrest him, he was quietly eating his supper of cheese and bread, as if he were not aware of the reward which had been offered for his capture. Many other rioters were also arrested. The bodies of rioters were found in the streets and fields. About twenty people had been killed. Many more were wounded.

(Adapted from "Chronicle" in the *Annual Register*, 1839.)

HOW GOOD WERE THE GOOD OLD DAYS?

25. What Have We Lost?

The debate over the benefits and costs of industrialization has continued up to the present day. Industrialization has undoubtedly provided us with material benefits. But some people today feel that our industrialized society is too fast-paced and that traditional values and ways of life have been lost along the way.

In the 1840's, Friedrich Engels described the workers' lives before the Industrial Revolution. Next, a writer of the 1970's gives his view.

How does each writer view the quality of life before the Industrial Revolution? According to these writers, what was the relationship between work and everyday existence?

A Moral and Peaceful Life

☐ The workers [in the cottage industries before the Industrial Revolution] had a fairly comfortable existence. They led a moral and peaceful life, treating others with virtue and honesty. Their living conditions were far better than the conditions of later generations. They did not need to overwork. They did no more than they chose to do, yet they earned what they needed. They had leisure time for healthful work in the garden or fields. This gardening was like recreation for them.

They took part in games with their neighbors. These games—bowling, cricket, and football—added to their physical health and energy. They were, for the most part, strong and well-built people. And in physical make-up they appeared similar to their peasant neighbors. Their children grew up in fresh country air. And only occasionally did the children have to help their parents at work.

(Adapted from *The Condition of the Working Class in England* by Friedrich Engels, 1845.)

A World Destroyed

☐ Before the Industrial Revolution, most people were born, lived, worked, and died in the same place, among people they knew and saw every day. There was no separation between working and living. Ties to the community were strong and were rarely broken. People lived a way of life which began before them and lasted after them.

People helped each other in getting food and shelter. No one grew fat or starved alone. The scale of everything was smaller, tools, houses, land, villages. There were no large and impersonal apartment houses, factories, or hospitals. Scale and activity were affected by nature. For example, time was measured by the daily sun and the seasons. Laws were carried out by local people.

Most important of all, people's economic activity was a part of their way of life. Yet it was less important than their whole way of life. That is, there were no purely economic or scientific "laws." Customs

or religion regulated life. Play, art, ceremony, and spiritual matters were not separated from the other parts of life. Activity of all kinds was based on folk and religious culture. This culture had developed without any overall plan. It had grown up in response to human needs. This world was destroyed in the making of our modern world.

(Adapted by permission of Random House, Inc. from *The Greening of America*, by Charles A. Reich. A portion of this book originally appeared in *The New Yorker* in somewhat different form.)

26. What Have We Gained?

While some people think that the traditional ways of life before the Industrial Revolution were ideal, others regard the changes brought about by industrialization as great improvements. In the following selections, two writers contrast the quality of life before and after the Industrial Revolution.

What were some of the material benefits that came with industrialization? What aspects of life before the Industrial Revolution do these writers criticize?

Some Benefits of Industrialization

☐ I believe in materialism. I believe in all the benefits of a healthy materialism. Benefits like good cooking, dry houses, dry feet, sewers, drain pipes, hot water, electric lights. Benefits like automobiles, good roads, bright streets, long vacations away from familiar scenes, new ideas, fast horses, swift conversation, theaters, operas, orchestras. I believe in them all for everybody. The people who die without knowing these things—the people who die deprived—may be pure as saints and wise as poets. But if they are, it will be in spite of their deprivation—not because of it.

(Adapted from *Economics: An Introductory Analysis* by Paul Samuelson. Copyright © 1976 by McGraw-Hill, Inc. Reprinted by permission of McGraw-Hill Book Company.)

No Golden Age

☐ The world we have lost was no paradise. It was no golden age of equality, open-mindedness, or loving-kindness. The coming of industry did not bring economic oppression. Nor did it create the situation where workers were unfairly taken advantage of. These things were already there.

(Adapted from *The World We Have Lost* by Peter Laslett. Copyright © 1965 Peter Laslett. Reprinted by permission of Charles Scribner's Sons and Associated Book Publishers Ltd.)

SUGGESTIONS FOR FURTHER READING

These books may be helpful in adding to your knowledge of the topics in each part of the book.

Part 1. LIFE IN ENGLAND: Before the Industrial Revolution

Addison, Joseph, and Richard Steele, *Selections from The Tatler and The Spectator*. New York: Holt Rinehart & Winston. A series of short pieces which present a lively account of English life, taken from two famous journals of the 1700's.

Brown, Ivor, *Doctor Johnson and His World*. New York: Henry Z. Walck. This easy-to-read book examines life in England during the 1700's. It describes the clothing and inventions during the time of Dr. Samuel Johnson, the famous writer, scholar, and wit.

Burton, Hester, *Riders of the Storm*. New York: Thomas Y. Crowell. A novel describing some of the problems of the late 1700's, when the merchants of Manchester opposed education for the poor.

George, Dorothy M., *London Life in the Eighteenth Century*. New York: G. P. Putnam's Sons. Describes life in London, England's only large city during the 1700's.

Mantoux, Paul, *The Industrial Revolution in the Eighteenth Century*. New York: Harper & Row. This challenging book discusses the effect of enclosure on small landowners and cottagers and the early changes brought about by industrialization.

Part 2. FORCES OF CHANGE: The Industrial Revolution

Brontë, Charlotte, *Shirley*. New York: E. P. Dutton. A novel which describes the violent reaction to the new machines of the Industrial Revolution. Its story takes place in the English countryside of the early 1800's.

Carter, Peter, *The Black Lamp*. New York: Thomas Nelson. Tells of the working conditions in the mills of the early 1800's, and of the weavers' struggle against the machine-powered looms.

Gaskell, Elizabeth, *Mary Barton*. New York: Penguin Books. A novel written in the 1840's about the city

of Manchester, portraying the conflicts caused by the new industrial way of life in England.

Heilbroner, Robert L., *The Making of Economic Society*. Englewood Cliffs, N. J.: Prentice-Hall. A well-written historical account of economic growth. Includes a discussion of the role of technology in England's Industrial Revolution.

Reader, William J., *Life in Victorian England*. New York: Capricorn Books. Well-illustrated description of the growth of industrial cities and working-class conditions in England during the 1800's.

Rooke, Patrick, *The Industrial Revolution*. New York: John Day. Provides a good overview of historical developments, important inventors, and social conditions during the Industrial Revolution.

Part 3. COSTS AND BENEFITS: Effects of Industrialization

Bowditch, John, and Clement Ramsland, eds., *Voices of the Industrial Revolution: Selected Readings from the Liberal Economists and their Critics*. Ann Arbor: University of Michigan Press. Presents the economic and social issues of the Industrial Revolution from the points of view of the great thinkers of that time.

Brown, Ivor, *Dickens and His World*. New York: Henry Z. Walck. A well-illustrated account of the career of Charles Dickens, the most popular English novelist of the 1800's. Includes a discussion of life during this period.

Grant, Neil, *The Industrial Revolution*. New York: Franklin Watts. A simple account of economic development and changes in England and the United States.

Heilbroner, Robert L., *The Worldly Philosophers*. New York: Simon & Schuster. Presents the lives and philosophies of such economic thinkers as John Stuart Mill, Robert Owen, and Karl Marx.

Inglis, Brian, *Men of Conscience*. New York: Macmillan. An account of the living and working conditions of England's poor, and of the efforts by such people as Robert Owen and John Stuart Mill to fight the evils of the Industrial Revolution.

Lovett, Margaret, *Jonathan*. New York: E. P. Dutton. A novel revealing the life of the poor who worked in the mines, mills, and potteries of the early 1800's.

Pike, E. Royston, *Hard Times: Human Documents of the Industrial Revolution*. New York: Praeger Publishers. Presents the attitudes and way of life of people in England during the Industrial Revolution through writings of observers of the time. Includes views on factory life, child labor, and women's roles.

GLOSSARY

act: a law. An act of Parliament is a law passed by the lawmaking body of Great Britain. (See also **bill**.)

agriculture: farming; the work of planting and harvesting crops, and raising cattle, sheep, and other farm animals.

apprentice: a young person who learns a craft by serving a person skilled in that craft. In the 1700's the apprentice agreed to work for a certain number of years, usually seven. In return, the apprentice received food, lodging, and instruction in the craft.

artisan: a worker skilled in a particular craft, for example, a weaver, a carpenter, or a silversmith.

bill: a proposal for a new law which is being considered by a lawmaking body. In England a bill becomes an act, or law, when it is passed by Parliament, and is signed by the ruler (king or queen).

borough: In Great Britain a town, or small area, that usually sent one or more representatives to Parliament. In the 1700's, boroughs and counties were the two kinds of election districts in England. A majority of the members of Parliament represented boroughs.

canal: an artificial waterway. During the 1700's, England's canals were a widely used means of transporting goods.

carding: a method of cleaning raw cotton or wool by pulling it through metal wire combs, or *cards*. This process removes seeds and dirt and untangles the fibers before spinning.

census: a count of the population conducted by the government. The first official census in England and Wales was taken in 1801.

charcoal: a kind of fuel made of partially burnt wood. Until the early 1700's, iron was made by melting together charcoal and iron ore. This iron was expensive and of poor quality. (See also **smelting**.)

child labor: the employment of children. The issue of employing children in factories and mines was widely debated during the Industrial Revolution.

class: a rank or level of society. People in the same social class usually have a similar standard of living and social position.

clothier: a handweaver who employed several people to help in the various stages of the manufacture of cloth.

coke: the substance that is left after coal has been heated to remove gases. In 1709 Abraham Darby

invented a method of producing iron by melting iron ore with coke instead of with charcoal. Coke was cheaper than charcoal, it burned better, and the supply was plentiful. (See also **smelting**.)

commerce: the buying and selling of goods—especially on a large scale—between cities, states, or countries.

common land: land that belonged to the village as a whole. The people of the village held certain rights to the common land, such as the right to graze animals on common meadowland and the right to gather firewood from the village forest.

cottage industry: the production of goods in private homes, usually by farm laborers in the countryside. Often the tasks required to make a product could be divided among the members of a family. The manufacture of wool cloth was an important cottage industry in England in the 1700's.

cottagers: farm laborers who owned no land. Cottagers rented their homes and worked on other people's farms for wages. Many cottagers worked at spinning and weaving in the seasons when farm work was scarce.

county: a province in England, sometimes called a shire, as in Lancashire and Buckinghamshire.

crop rotation: a method of farming in which several crops are alternated in different strips of land every planting season.

death rate: number of deaths per year for every 1,000 people in a certain population.

enclosure: the process by which a village's common land was turned into private property. By an act of Parliament, common land was divided among the landowners in a village. The amount of land awarded to each landowner depended on the amount of land the person already owned. Those villagers who owned no land but had rights to use the common land were sometimes given a small piece of property to make up for the loss of these rights. At the same time, boundaries were redrawn so that each landowner had one piece of property, rather than scattered strips of land throughout the village. Each person's property had to be fenced in, or *enclosed*.

exports: goods produced in one country and sent to another country to be sold.

factory: a building containing power-driven machines run by many workers. A *factory system* is the large-scale manufacture of goods in factories. This is in direct contrast to cottage industry in which people

- work in their own homes, using simple machinery run by hand.
- fallow:** unplanted after plowing. In the traditional system of crop rotation, farmers left certain strips of land fallow during a growing season in order to let the soil renew itself. In the next growing season, they planted these strips, and left other strips fallow. (See also **crop rotation**.)
- flying shuttle:** a device invented by John Kay in 1733. The flying shuttle produced wider pieces of cloth at twice the speed than the older type of shuttle. (See also **shuttle**.)
- foundry:** a place where metal is melted down and molded.
- frame:** a spinning machine patented by Richard Arkwright in 1769. The frame produced cotton thread that was much stronger than the thread produced using the older spinning machines. Arkwright's machine was also called a *water-frame* since it was powered by water, and not by hand.
- gentry:** a group of landowners in England who inherited estates and high rank in society. The gentry were considered the social and political leaders of their districts.
- glean:** to collect the remaining grain from a harvested field. In English villages before enclosure, the villagers had the right to glean in the fields of every landholder in the village.
- handloom:** a hand-operated machine for weaving cloth.
- House of Commons:** the lower branch of Parliament, the lawmaking body in Great Britain. The House of Commons represents all the voting citizens of Great Britain except nobility and high-ranking clergy.
- House of Lords:** the upper branch of Parliament, the lawmaking body in Great Britain. The House of Lords is composed of nobility and high-ranking clergy.
- imports:** goods bought in one country that have been produced by another country.
- industrialization:** development of large-scale manufacturing to produce most of the goods in a country. In the late 1700's, England became the first country to experience industrialization. Since then industrialization has occurred in many countries all over the world.
- Industrial Revolution:** the social and economic changes that occur when machines and factories replace hand labor.
- ironworks:** a place where finished iron is produced, or where iron goods are made.
- labor union:** an organized group of workers who have joined together to bargain with their employers for better wages, hours, and working conditions.
- life expectancy:** the average life span of someone born in a particular year. For example, the life expectancy of someone born in the United States today is about 70 years.
- loom:** a machine used for weaving thread into cloth. (See also **handloom** and **power loom**.)
- manor:** a lord's estate. The lord of the manor had authority over the people who lived on the estate.
- manufacture:** the production of goods by hand or machine. Manufacture often refers to large-scale production in factories.
- manufacturer:** a factory owner; an employer of workers in manufacturing.
- market:** any place or situation in which buyers and sellers exchange goods and services.
- market town:** a village where people gather to buy and sell goods. In England certain market towns were famous for particular products made in the surrounding area. For instance, Leeds was a famous market town for the woolen industry of western Yorkshire.
- materialism:** the tendency to attach a great deal of importance to the pursuit of wealth, comfort, and possessions.
- mercantilism:** an economic theory in the 1600's and 1700's which held that a nation would increase its wealth by exporting more than it imported. Colonies played an important role by supplying raw materials for the nation's industries and by buying its manufactured products.
- merchant:** a person who buys and sells goods for profit.
- mill:** a factory.
- mule:** a spinning device invented in 1779 by Samuel Crompton. The mule combined the advantages of the spinning jenny and the frame. It produced fine, strong cotton thread.
- natural resources:** materials supplied by nature, such as land, water, and minerals, which are part of a nation's wealth.
- parish:** in Great Britain, a district of local government usually based on the boundaries of the church district. The daily governing of the English countryside was carried out in the parishes by the local justices of the peace.
- Parliament:** the lawmaking body of Great Britain made up of the House of Commons and the House of

- Lords. In the 1830's and 1840's, Parliament established several *parliamentary committees* to investigate such social issues of the Industrial Revolution as child labor, working conditions in the factories, and the problems of the handloom weavers.
- patent:** a document that gives an inventor the exclusive right to produce, sell, and profit from his or her invention for a specific number of years.
- petition:** a formal written request to a law-making body; the first step in the law-making process.
- pig iron:** crude iron produced by melting together iron ore and coke or charcoal.
- power loom:** a steam-powered loom invented by Edmund Cartwright in 1787. The power loom could be run by unskilled workers in factories.
- productivity:** a rate of production. In the case of individual workers, productivity is the amount of goods produced per worker per hour. Productivity may also refer to machines, farmland, or factories.
- puddling and rolling:** a manufacturing process invented by Henry Cort in 1784 which improved the quality of iron. In this process, pig iron was heated and then stirred with iron rods until the impurities disappeared. Then the iron was passed between iron rollers. The final product was a high-quality iron that could be produced quickly and cheaply.
- raw materials:** substances in their natural state which are used to make a product. For example, raw cotton is the raw material for cotton cloth.
- representation:** the principle that representatives or delegates to a law-making body are responsible for defending the interests of the people who elected them.
- rural:** having to do with the countryside, country life, or farming.
- secret ballot:** a method of voting in which people record their votes privately.
- shuttle:** an instrument used by a weaver to move thread back and forth across a loom.
- smelting:** the process of melting down metal ore, sometimes blending it with another substance, in order to remove impurities. Iron ore is smelted by blending it with coke or charcoal.
- social class:** see *class*.
- specialization:** a pattern of production in which workers, business firms, regions, or nations concentrate on doing one or a few things, rather than attempting to produce everything.
- spindle:** in spinning, a rod which is made to revolve in order to twist fibers into yarn. A spinning wheel originally had only one spindle, but later all spinning machines had more than one.
- spinning jenny:** a hand-powered machine invented by James Hargreaves in 1765 which could spin several threads at the same time.
- spinning wheel:** a simple machine for making yarn, consisting of a spindle and a large rotating wheel run by foot or by hand. The wheel turned the spindle, which spun one strand of yarn at a time.
- squire:** a country gentleman who was usually the main landowner of a district.
- steam engine:** an engine that converts the energy of pressurized steam into mechanical energy. In 1712, Thomas Newcomen built a steam engine which pumped water out of mines. James Watt's improved steam engine, patented in 1775, was faster and used less coal. It was soon used in many industries, including spinning and weaving, iron production, mining, and eventually railroads.
- suffrage:** the right to vote.
- technology:** the way things are produced; the application of scientific, technical, and engineering knowledge to the processes of production.
- tenant:** a person who pays rent to occupy a building or to use a piece of land.
- tradespeople:** shopkeepers and people who worked in skilled trades, such as weavers and carpenters.
- urban:** having to do with the city and city life.
- wage and price index:** a method for comparing wages and prices over a period of time.
- warp:** the threads running lengthwise in a loom.
- water-frame:** see *frame*.
- weaving:** the process of making a piece of cloth by interlacing threads of yarn on a loom.
- weft:** the threads running crosswise in a loom. Also called the *woof*.
- welfare:** payments by government to people who cannot support themselves. In England in the 1700's and 1800's, the parishes administered welfare payments and ran the orphanages and poorhouses.

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